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AUTHOR	FRIEDMAN, MYLES I., ED.; AND OTHERS
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ABSTRACT

THIS DOCUMENT INCLUDES THREE PAPERS ON LONG-TERM INVESTIGATIONS OF THE POPULATION CHARACTERISTICS OF DISADVANTAGED PRESCHOOL CHILDREN. MYLES I. FRIEDMAN, ET.AL., APPROACHED THE PROBLEM OF CURRICULUM CONSTRUCTION BY DESCRIBING AND IDENTIFYING READINESS BEHAVIORS IN CHILDREN. TWENTY-TWO TESTS WERE ADMINISTERED TO 1600 4- TO 6-YEAR-OLD ADVANTAGED AND DISADVANTAGED CHILDREN. RESULTS WILL BE AVAILABLE SOON. CONSIDERING THE DISADVANTAGED A HETEROGENEOUS GROUP, ROBERT P. BOGER AND SUEANN R. AMBRON CONSTRUCTED A BEHAVIORAL MODEL INCLUDING SUBPOPULATIONS (RURAL OR URBAN, SOCIAL CLASS, ETC.), PSYCHO-EDUCATIONAL DIMENSIONS (INTELLIGENCE, LANGUAGE SKILL, ETC.), AND PROCESS VARIABLES (ENVIRONMENTAL FACTORS). THE INTERACTING VARIABLES OF THIS MODEL WILL BE USED TO IDENTIFY AND ASSESS DISADVANTAGEMENT. A BIBLIOGRAPHY IS INCLUDED. E. KUNO BELLER INVESTIGATED THE EFFECTS OF EARLY EDUCATIONAL INTERVENTION ON THE INTELLECTUAL DEVELOPMENT OF LOWER CLASS, DISADVANTAGED CHILDREN, MEASURING INTELLECTUAL FUNCTIONING BY STANDARDIZED TESTS AND CLASSROOM GRADES AND MOTIVATION BY RATINGS AND DIRECT OBSERVATION. MAJOR FINDINGS AND CONCLUSIONS WERE REPORTED. THESE FINDINGS INDICATE A NEED FOR PLANNING CURRICULUM DESIGNED TO HELP DISADVANTAGED CHILDREN EXPLORE THINGS ON THEIR OWN INITIATIVE AND CARRY ACTIVITIES TO COMPLETION, BY HELPING THEM DEVELOP GREATER TRUST IN THEIR ADULT ENVIRONMENT. (DR)

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POPULATION CHARACTERISTICS
OF
DISADVANTAGED PRE-SCHOOL CHILDREN

Introduction

The three papers included in the present document were presented on October 9, 1968, at a seminar sponsored by the Office of Research and Evaluation, Project Head Start. The seminar was held in Washington, D.C., and was under the supervision of Dr. Edith Grotberg, Coordinator of Research.

The three studies reported dealt with population characteristics of disadvantaged children and were long-term projects. Although none of the investigations were complete at the time of the seminar, it is believed that there is considerable value in reporting the direction of work in progress when the work involves longitudinal studies such as those included. The free exchange of views and directions of inquiry is at least one means of stimulating fresh insight and new prospectives among investigators with common interests.

There is no indication in the present reports of the intense discussions which took place following the delivery of each paper. It is the hope of the Editor that some of the stimulation of that exchange may be felt by the reader even though the immediacy of the meeting has vanished.

Myles I. Friedman, Editor

READINESS AND INSTRUCTION: INDIVIDUAL DIAGNOSIS AND TREATMENT

By

Myles I. Friedman

George H. Lackey, Jr.

Garrett K. Mandeville

Charles R. Statler

Introduction

Although learning appears to be a continuous process from the time of birth (or before), formal education is implicitly a purposeful activity. Individuals learn countless skills, facts, and concepts--accidentally and incidentally--throughout their lives. But it is the business of education to direct and sequence learning toward planned ends. Educators, therefore, establish goals for learning and seek teaching strategies for the attainment of those goals.

One begins with the general notion that time and experience bring about changes in the mental state of an individual. The matter of time (maturation) is recognized as being a crucial factor, apparently more so in early learning (childhood) than in later learning but one that is most difficult to separate from experience in terms of influence. The experiences of an individual, on the other hand, are obviously and logically major factors in this changing of mental states which we term learning.

But a change in the mental state of an individual is always a matter of inference. The person behaves in a new manner, and the inference is made that there has been a change in mental state. From these considerations it is a short step for the learning strategist to reach the notion of behavioral objectives for education. Not only is behavior an obvious basis for logical inferences concerning learning, but it makes possible accurate measurement--the assessment of the degree to which educational goals have been attained.

The notion of interpreting or translating more general educational goals into behavioral objectives and the use of such paradigms as the triangle of interacting (1) objectives, (2) learning experiences, and (3) evaluations, appear so logically and empirically founded that one cannot but wonder that they have not resulted in an even greater impact on modern education. The present writers hold that one of the major reasons that they have not is an inadequate treatment of the readiness concept. All teaching strategies naturally assume a starting point or baseline of learning from which a curriculum sequence begins, but the argument is presented here that the investigation of readiness has suffered from the difficulty which educators have experienced in viewing and studying the concept in its logical relation to objectives and learning experiences.

The fact that a great deal of time and effort, particularly in recent years, has been devoted to the subject of readiness by competent scholars can hardly be denied. Important theoretical contributions have been made throughout the past fifty years, and there is a voluminous quantity of empirical findings on different aspects of the subject. Numerous tests have been developed and administered to young children, and these have generally yielded some total measure of readiness which often can be demonstrated to be predictive of success on later cognitive tests. It can hardly be denied that much has been done with the identification of mental "traits," and various instruments have been designed to measure them.

Yet, the study of readiness has not been tightly related to behavioral goals, and the findings have not influenced greatly the logic of curriculum construction. As indicated earlier, the present writers believe that these things have not happened because readiness has not been accurately identified and placed conceptually and theoretically in its proper perspective with goals and instructional strategies. The resulting empirical findings, therefore, have been more limited than they need be.

Current Practice

In relating current practice in curriculum construction to readiness, it is useful to consider two general criteria. One of these has to do with whether or not learners are proceeding--as a result of a curriculum--toward explicit objectives with optimum speed and efficiency. This concept is consistent with Carroll's[1] position that aptitude is the amount of time required by the learner to attain mastery of a learning task. This view assumes that all, or at least most, learners can conceivably attain mastery of a learning task.

A second criterion for assessing the effectiveness of a curriculum is related to whether learners are moving toward explicit objectives. In a given situation one set of objectives may be stated while an investigation of the associated curriculum may reveal that learners are proceeding toward some different or implicit group of objectives. (Of course, if learners cannot proceed from their present levels to the objectives, then the curriculum which proposes the impossible sequence is in error.) In other words, the learning activities may not be valid steps to the goal or goals.

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[1] John Carroll, "A Model of School Learning." Teachers College Record, 1963, 64: 723-733.

Now as the educator sets about the task of constructing a curriculum, it is necessary for him to identify the objectives the curriculum is to attain and to consider the nature of the baseline upon which his curriculum is to be constructed. In other words, he must ascertain where the learner is to go and where he is at the beginning of the learning experience. It follows, then, that if a curriculum is to be constructed that meets the first criterion (optimum speed and efficiency) the educator must know: (1) the characteristics that the learner is expected to have when he reaches the objective; (2) the characteristics of the learners who are to be administered the curriculum; (3) whether it is possible for the learners to reach the objectives--mental retardates would not be expected to reach the objective of facility with advanced algebra; and (4) references to efficient means of proceeding from the baseline to the objectives. The more the educator knows of each of these four items, the more valid (under the criteria presented) can be the resulting curriculum.

Although there is significant work being done in the field which is related to both criteria listed (Gagné's[2] work with the sequencing of learning activities is particularly relevant), a consideration of the speed and efficiency of a curriculum quickly reveals significant problems. In order to more accurately identify the characteristics that the learner is expected to have when he has attained the objectives, the notion of behavioral objectives has been accepted. There is little doubt that this is immensely important in increasing the effectiveness of a curriculum.

But with respect to the characteristics of the learner to be administered the curriculum--the baseline of the curriculum--the popular referents continue to be those of grade level, age, group means, and population norms. Grade levels and age are quite gross for use as readiness referents; there is sometimes as much variation within groups as there is between adjacent groups. Group means and population norms certainly lack precision as referents; but more importantly, none of these referents are behavioral referents. The mean of a group of behaviors is not a specific behavior. Granted that these referents are quite useful in comparing the general status of individuals and groups to other individuals and groups, but the use of the referents as indicators of readiness result naturally in teaching strategies aimed at some point of central tendency in an instructional group which may not reflect the specific readiness of any member of the group. Individual attention thus becomes the goal of the classroom teacher, but individually prescribed instruction remains impossible in the absence of individual diagnosis.

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[2] Robert M. Gagné, "Curriculum Research and the Promotion of Learning." Perspectives of Curriculum Evaluation. AERA Monograph Series on Curriculum Evaluation (Chicago: Rand McNally & Company, 1967), I, pp. 20-23.

Current practice in curriculum construction, then, involves problems associated with both of the criteria noted earlier. The concept of behavioral objectives has been introduced and accepted as a technique for increasing the precision with which educational goals may be identified. But even today, the scope of their use on the classroom level is surprisingly limited. Gross readiness referents such as age, grade level, group means, and population norms provide the base upon which curricula are designed and administered; and grouping practices continue to be an issue as educators attempt to provide instruction to students who are more or less alike on a variable more or less related to the content to be presented.

Not only is the practice of goal identification limited and readiness for instruction a gross and confused matter, but curricular strategies have received relatively little attention in the framework of some total paradigm. The sequencing of content has been accomplished either on the basis of what has come to be known as "content order" or on the basis of "psychological order." In the former case, the instruction gains direction from what is concluded to be an inherent order of the material to be learned. In the latter case, psychological principles are supposed to indicate some order for the content which makes it easier for the student to comprehend. But both methods are more logically than empirically derived and various strategies are rarely tested against each other for relative effectiveness (e.g., procession toward explicit goals with optimum speed and efficiency).

In every profession, treatment is derived and directed from diagnosis. In education, diagnosis (once goals have been established) is the identification of the readiness of individual learners, at a given point in time, whatever the contributing influence of maturation and experience. Educational treatment then is the prescription of specific experiential sequences leading to the explicit goals. The desired end state, the diagnosis, and the treatment must be accurately defined. In a word, improved curriculum construction awaits behavioral referents that lead progressively to behavioral objectives in a valid sequence with optimum speed and efficiency.

The General Direction of the Inquiry

The Committee on Educational Research (School of Education, University of South Carolina) approached the problem of curriculum construction with an initial emphasis on the general concept of learning readiness. The Committee accepted the assumption that cognitive and psychomotor skills[3] are acquired by individuals in discernible patterns and that particular skills are related both to time (maturation) and experience (learning). The members of the group further accepted the proposition that the occurrence patterns are in clusters of related skills in an easy-to-hard sequence in which the performance of a given skill is prerequisite to the acquisition of other related but more complex skills. In other words, the skills emerge in definable types and in common sequences from easy to difficult within types and across individuals.

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[3] Benjamin S. Bloom, ed., Taxonomy of Educational Objectives Handbook Number 1: Cognitive Domain. (New York: David McKay Company Inc., 1956), p. 7.

At this point, it was necessary to define what was meant by readiness, or more usefully, a readiness behavior. Continuing to emphasize the empirical orientation which had characterized early speculations, the present investigators defined readiness behavior in the following manner: *A readiness behavior is a unit of behavior that an individual must be able to perform prior to being able to perform another given unit of behavior*. The identification and description of a given readiness behavior enhances curriculum construction because a readiness behavior necessarily precedes the achievement of some specific outcome or goal unit of behavior (behavioral objective). Under this definition, an example of a readiness behavior might be the "selecting of the color red" prior to the performance of the behavioral objective, "coloring the house red."

The salient issue is that a readiness behavior is always defined in terms of "Readiness for what?" Once the behavioral objective has been defined, then the sequenced behaviors which always precede it are readiness behaviors. Once such behavioral units are identified and placed in a "proper" relationship to each other, an educator could theoretically identify the sequence of readiness behaviors leading to some goal unit of behavior.

The foregoing considerations naturally led to an early view of a two-dimensional model of readiness in which the horizontal dimension would represent the various types of skills (clusters or "traits," e.g., number ability, word knowledge) and the vertical dimension would represent the appearance sequence of the skills (easy-to-hard). If the entries in the matrix, the cognitive and psychomotor skills, then could be described in a sufficiently objective fashion (empirical behavioral units), the matrix could provide a basis for curriculum construction which was more accurate and efficient than has otherwise been obtained.

Of course, the notion of plotting readiness in a two-dimensional matrix was hardly original, but the possibility of operationalizing entries within the cells of the matrix, if awkward or artificial assumptions could be avoided, appeared to offer some promise as a direction for inquiry. Nevertheless, the naivete of the two-dimensional (traits and sequences within traits) quickly became apparent. Aside from the work of important scholars in the field, simple observation would indicate that mental development is much too complex and efficient to be described usefully with so simple a model. Certainly it would not be realistic to believe that cognitive and psychomotor skills could be separated into exclusive columns of related and sequenced skills. A skill appearing in one column might well be prerequisite for the acquisition of skills appearing in some other column. As a matter of fact, logic would indicate that the model should be much more like the learning hierarchies offered by Gagné and others working along similar lines in curriculum sequencing. Instead of entries in a two-dimensional matrix, readiness behaviors might best be considered as elements in a readiness network in which the members were related on the basis of the definition of a readiness behavior (e.g., a unit of behavior that an individual must be able to perform prior to being able to perform another given unit of behavior).

In addition to the foregoing considerations, the network view was advantageous from a research point of view because it involved the fewest *a priori* restrictions on the collection and analysis of data. The only general assumption involved would be that cognitive and psychomotor skills appear in discernible patterns across subjects (and this assumption obviously would be tested) and the general research question would be related to the descriptions of these patterns. Secondary questions would be related to the comparison of defined sub-populations for differences in patterns. At this point the reader will appreciate that the analysis of the data would be only one of the acute difficulties of conducting a wide-scale investigation along these lines.

Assuming that discernible patterns of cognitive and psychomotor skills can be identified and related (and certainly there are many who have not considered this an impossible task), how would the model be viewed? How would instructional readiness, strategies, and objectives be related? What is the perspective?

Essentially, the present writers contend that the model must be viewed in each of two ways: first, as a readiness model, and secondly as an instructional model. The first view, the readiness model, is deterministic in that the acquisition of certain skills must always precede certain other skills. (Although deterministic, one recognizes that the validation of the model must occur within the structure of a probablistic analysis.) In other words, some skills in the emerging network must be learned before it is possible to learn other skills, and these skills can be defined operationally. These behavior units are _readiness behaviors_.

The second view of the model is an _instructional_ or _curriculum_ view of the Gagne type and is concerned with what might be described as _facilitating_ points between readiness behaviors. For example, consider a readiness behavior A that is prerequisite to readiness behavior B. That is, behavior B cannot be acquired prior to behavior A. How, then, does the learner move from A to B in the network?

The contention is made that there are probably several routes possible, several sequences of experiences, but that one is more efficient than others for many learners. In other words, a particular sequence of experiences may be most appropriate for the large majority of learners while unique sequences may be most facilitating for particular learners.

Maturation doubtlessly influences the movement from one readiness behavior to another to a greater or lesser degree probably depending to some extent on the readiness behavior to which the learner is moving. Nevertheless, it is the facilitating steps that are the concern of curriculum builders, and these represent alternative paths between readiness behaviors.

The meaning of individual differences in curriculum becomes apparent in the perspective of the model. The model denies different basic sequences of readiness behaviors for different persons, but it does not deny different sequences of facilitating experiences between readiness behaviors.

Now aside from the arbitrary definitions of the model, how do readiness behaviors differ from facilitating behaviors between readiness behaviors? Essentially, the difference is one of precision of measure. The probability of a given readiness behavior being a universal prerequisite to another stipulated readiness behavior is very high compared to two facilitating behaviors. The sequencing of the latter is much more subjective and more dependent upon individual differences in learners. One learner, for example, may go from one readiness behavior to another with a very limited number of facilitating experiences and/or a short elapsed time, whereas another learner may require a larger number of experiences and/or a longer maturation period. But all learners must pass from one particular readiness behavior to another particular readiness behavior. (The position of the present writers with respect to the movement from one readiness behavior to another through means of facilitating steps is consistent with the view of aptitude held by Carroll. As indicated earlier, he defines aptitude in terms of the amount of time required to achieve a learning goal rather than in terms of the probability of achieving it.)

The considerations included in the view of readiness presented on the preceding pages are not particularly new or original. Fortunately, these are not criteria for a fruitful direction of inquiry. As a matter of fact, the more consensus one is able to find for the appropriateness of a starting point, the more valid it is likely to be. The present position does have the advantage of relating readiness, instruction, and behavioral objectives in a logical network with reasonable criteria for planning and assessing the effectiveness of curricula sequences. Moreover, it dictates a highly inductive approach to the problem with a minimum of preconceptions. The difficulty, of course, lies in designing an investigation of sufficient scope and sophistication to lead empirically through the identification of readiness and facilitating steps to the actual construction of curricula and to the development of diagnostic and evaluation instruments. The problems associated both with educational diagnosis and treatment cannot be separated and, therefore, must be addressed together. The Committee on Educational Research began the inquiry with the design of an investigation for the identification of readiness and facilitating behaviors in young children.

Design of the Inquiry

Basic Considerations. The general design of the inquiry was indicated by the discussion presented in the preceding section. Apparently, a large number of behavioral tasks requiring various skills for performance must be presented to a large population of individuals of sufficiently varied levels of mental development, and the responses analyzed on the basis of types and prerequisites.

Each task would be a description of a unit of cognitive or psychomotor behavior which an individual clearly could or could not perform. Examples of such tasks might be: (1) close the door and return to your seat, (2) what color is the dress, and (3) add five and three. At this point no assumptions would be necessary regarding the "type" of functioning required to solve a particular problem task. The emphasis on skill identification necessarily would be inductive and operational.

Many of the design problems associated with such a line of inquiry were immediately apparent. First the selection of appropriately varied tasks for soliciting the skills would not be easy. Every effort must be made to see that these were as representative of a universe of cognitive and psychomotor problems as possible and feasible.

In addition, the administration of the problem tasks to individuals must be such that each problem could be scored as either an absolute pass or fail (not yet learned) with the degree of testing error lowered to a critical minimum. Finally, a method of analysis must be identified or constructed that would be appropriate for treating dichotomous data in a manner that would result in clusters of ordered skills without reference to an extraneous coordinate variable such as age.

From a practical viewpoint, the validity of the identification of readiness and facilitating behaviors would depend upon inclusion in the investigation of appropriately varied populations, a low error method of measurement, and a highly sensitive analytic technique. The extent of the identification would depend on the variety of skills solicited--in terms of both type and difficulty levels--included in the investigation.

[4]The Problem Tasks. The first major problem in designing an investigation based on the above rationale was that of identifying a large number of problem tasks that could be expected to elicit mental behavior from young children. The purpose of the investigation was to identify skills in terms of particular tasks that the subject could either perform or could not perform. It was considered particularly important that the approach be as inductive with respect to the selection

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[4] From this point on, the description of the investigation is almost verbatim from a report to the sponsoring agency, U.S. Office of Economic Opportunity, Head Start (Contract Number OEO-4114), "An Investigation of Problem-Solving Abilities in Early Childhood." August 1968.

of these tasks as possible. Of critical importance was the necessity of the tasks being varied, both with respect to format and content.

A reasonable approach to the problem appeared to be a review of all available tests and procedures for measuring cognitive and psychomotor skills in young children. If items on a given test were viewed as tasks independent of other items on the test, it may be possible to assemble the necessary array of problem tasks. To this end, more than fifty tests were reviewed by the Committee on Educational Research, and an item classification outline was developed as the tests were reviewed. Each item on each of the tests was classified according to the type of behavior it appeared to elicit. Through this process, it was possible to select the widest variety of cognitive and psychomotor tasks and at the same time avoid extensive duplication. Finally, items from twenty-two tests were selected for use in the investigation.

Sample Selection. In view of the nature of the inquiry--the identification of readiness levels--three fundamental considerations were paramount in the identification and selection of subjects to be included in the investigation. These included the age range of subjects to be tested, the sub-cultural groups to be represented, and the total number of subjects to be utilized.

With respect to the age range of subjects to be tested, the decision was made to include principally four, five, and six-year olds (a smaller group of three-year olds were included for a supplementary analysis). The position was taken that inasmuch as the child would be required to respond to verbal instructions in order to accomplish the majority of the tasks, that this was a feasible and defensible age range with which to work. It was also noted that this range could be lowered and raised in subsequent studies on the basis of data obtained in the present investigation.

In view of the nature of the research rationale, it was also necessary to have subjects spread equally across the age range. If skills were to be identified and then related in order of appearance of the skills, obviously there must be provisions made to insure that traits were being sampled at equal intervals along the developmental continuum. Thus, it was decided to divide the age range of four through six years into three month intervals and include the same number of children in each interval. That is to say, there would be the same number of children in the age interval 4.0 - 4.3 months as between 4.4 - 4.6 months and so on.

In the matter of sub-cultural groups to be represented in the sample, the decision was made to include equal numbers of "disadvantaged" children (as defined by Office of Economic Opportunity guidelines) and "advantaged" children as defined as coming from families within a specified income range. The reason for this division was to insure that subjects would come from widely varying experiential backgrounds. This would increase the probability that readiness levels which exhibit consistency over the populations would indeed be "universal." The two groups were further divided into "Northern" and "Southern" with respect to the geographic location of the subjects for the same reason. Within each of the four groups thus defined, the age range and number of subjects within age ranges would be the same.

Finally, the total number of children to be included in the sample was determined by the minimum number required in each of the sub-cultural groups for meaningful analysis and the maximum number considered feasible in view of the extensiveness of the individual items to be administered. The decision was made to include four hundred children across the stipulated age range in each of the four groups. The nature and size of the sample is represented in Figure 1.

Geographic Location	Economic Background		Total
	Advantaged	Disadvantaged	
North	N=400 Ages 4.0-6.11	N=400 Ages 4.0-6.11	800
South	N=400 Ages 4.0-6.11	N=400 Ages 4.0-6.11	800
TOTAL	800	800	1600

Fig. 1.--Sample Characteristics and Size

Testing Procedures and Controls. Once the various tests to be utilized in the investigation had been identified and the criteria for the sample established, it was necessary to design procedures and field controls that could be expected to yield data essentially free of contamination. These procedures and controls principally were related to the amount and frequency with which subjects would be tested and with conditions under which tests would be administered.

Inasmuch as twenty-two tests finally were chosen to be administered, no individual child could be expected to undergo such extensive testing in a relatively brief period of time without excessive fatigue. On the other hand, if the time were extended past a month for the testing of one child, there would be a serious question as to whether or not the data from the collective tests could be considered comparable with respect to the developmental continuum. In other words, maturity would at a point become a contaminating factor.

The tests, therefore, were organized into four "batteries" each of which was to be administered to one-fourth of the total sample. In each sub-cultural group, 100 children across the age range would receive Battery I, 100 children would receive Battery II and so on. The division into batteries was made in such a way as to vary the types of tests across batteries and to achieve approximately equal administration times (6-7 hours) for each battery.

In order that some basis for relating items across batteries would exist, two complete tests were designated as "anchor" tests to be administered to each child in the sample, common to all children.

In addition to procedures involving the administrative scheduling of the various tests, a number of control procedures were devised to assure consistency of testing conditions and validity of the data collected. In general, these procedures required that each battery of tests (including the anchor tests) be administered to the same number of children. Anchor tests were to be administered prior to any battery tests in all cases. The order of administering the tests in a given battery was to be reversed in the two halves of a sample unit in an attempt to counter-balance whatever practice effects accrue as a child was administered the tests in series.

When feasible only one child was to be tested in any room at one time, and no testing session was to exceed ninety minutes per day for any child. These two controls were designed respectively to minimize interference during the testing situation and to reduce the possibility of fatigue. No child was to be tested more than three sessions in a given week, but each child was to be administered the anchor tests and the appropriate battery within one month.

A third area requiring the development of special procedures was the actual administration of the various test items. Each test was to be administered to each child on an individual basis, but there was a general consensus that disadvantaged youngsters have communication problems in this type of situation. The administration of items according to the test manual's specifications perhaps would very often result in a failure to respond because the child did not understand what the task was rather than because he could not perform it. This problem led to the development of what was termed "Maximum Performance Testing." When necessary, the examiner would probe for responses beyond the specifications of the test author's instructions but within the context of the basic intent of the item. This procedure would maximize to whatever extent was possible the likelihood that the youngster would respond if he were capable of responding. The rationale and procedures for "Maximum Performance Testing" will soon appear in a separate paper.

Present Status. At the present time, the majority of the children to be included in the investigation have been tested both in the north and in the south. Certain analytic procedures have been pilot-tested with early data (Southern Disadvantaged) and are now ready for utilization. The first results of the research based on the readiness position outlined in the present paper will be available within the year.

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SUBPOPULATIONAL PROFILING OF THE PSYCHOEDUCATIONAL DIMENSIONS OF DISADVANTAGED PRESCHOOL CHILDREN

Robert P. Boger
Sueann R. Ambron

Introduction

Although the phrase is becoming very trite and increasingly annoying to the ears of social scientists, we continue to run out of time in our programs to overcome basic inequities in the "cafeteria" of opportunity offered American children. Contemporary events indicate that feelings remain strong both from the liberal and the conservative vein, but the "writing on the wall" concerning preschool programs is clear; they will increase and they will become more sophisticated.

One of the real limitations in improving our efforts is the lack of adequate input knowledge about the particular natures of the children we are attempting to help. Education for years has been moving to more prescriptive, individualized approaches to the development of children, and although available resources clearly limit the capabilities of individual Head Start Centers in this regard, we should be able to make Head Start a much more potent force in meeting the idiosyncratic needs of groups of disadvantaged children.

The needs of specific groups of disadvantaged children in compensatory education programs have been armchaired at many levels and partially researched, but specific, empirically based, inclusive approaches for the variety of children in the disadvantaged population are not available. New programs could be designed and those in existence vastly improved if this behavioral information were systematically obtained.

As Gordon and others have so often pointed out, encounters with the environment are especially critical molders and determinants of patterned behavior in young children.[1] The environment of the young child centers in the home where the family acts as the primary agent of socialization imparting to the child the skills, knowledge, attitudes, values, and motives current in the group.[2] The process of socialization is vividly described by Parsons.[3] The child is like a pebble thrown by the fact of birth into a social pond. The effects of this event are at first concentrated at the point of entrance, but as he grows up, his changing place in society resembles successively widening waves radiating from his initial place in the family toward wider orientation. Thus, knowledge about what the child learns in the early years in the home must be a greater part of our input into intervention development, particularly as it relates to specific subcultural groups.

The disadvantaged are a heterogeneous group of economically deprived children, not a homogeneous group as our programs too often assume. In the past three years, since Head Start began, research on the disadvantaged has mushroomed resulting in new classroom approaches and materials, but a gap remains in the information; we still do not know enough about the etiology of disadvantaged or what the term means for specific subgroups of disadvantaged children. Researchers in the field of the disadvantaged tend to make the mistake of generalizing about a population that is infinitely variable. Middle class-lower class comparisons were helpful in the beginning, but for compensatory programs meaningful to specific groups with specific problems, more definitive approaches are needed. In his often quoted paper in the Review of Educational Research, Gordon commented that

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[1] E.W. Gordon and D.A. Wilkerson, Compensatory Education for Disadvantaged Programs and Practices: Preschool Through College (New York: College Entrance Examination Board, 1966).

[2] W.H. Sewell, "Some Recent Developments in Socialization Theory and Research," Annals of American Academy of Political and Social Science, (1963) 149:161.

[3] T. Parsons and R.F. Breio, Family Socialization and Interaction Process (New York: Free Press of Glencoe, 1953).

> there is probably no typically socially disadvantaged child but instead a wide variety of such children with widely varying characteristics. To describe them and plan for them as a group is hence in error; differential psychology is as important here as in any other area.[4]

The recognition of differences should lead to techniques for measurement and for tailoring programs responsive to individual needs.[5] This discussion underlies the need for specific information about the differential school learning abilities of children from various disadvantaged groups.

The focus of the present paper is the development of a proposed approach for profiling psycho-educational dimensions for subpopulations of disadvantaged preschool children. The three main parts of the model are subpopulations of the disadvantaged, psycho-educational dimensions of the child, and process variables of the child's significant environments. Each of these will be considered separately. The development of this work was carried out in large part by Sueann Ambron, a research associate with our Center, presently serving with the Peace Corps in Jamaica.

As Stodolsky and Lesser point out in their significant article concerning learning patterns in the disadvantaged, the problem of definition continues to plague us in dealing with the concept of disadvantagement in our culture.[6] Which dimensions are to be included as critical in defining subcultures within the general disadvantaged population is perhaps the easiest part of the task.

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[4] E.W. Gordon, "Characteristics of Socially Disadvantaged Children," Review of Educational Research (1965), 35(5), 377-388.

[5] Martin Deutsch, "Minority Group and Class Status as Related to Social and Personality Factors in Scholastic Achievement," Society for Applied Anthropology Monograph #2 (1960).

[6] S.S. Stodolsky and G. Lesser, "Learning Patterns in the Dis-Advantaged," Harvard Educational Review (1967), 37, 546-593.

Subpopulational Variables

For the purposes of this model, the following selected subpopulational variables were included to form the matrix: (1) cultural group, (2) rural or urban locale, (3) geographic area, (4) social class, and (5) sex. If one thinks in terms of the typical cubic model, each cell or block defines a theoretical unit of the overall population of the disadvantaged. In reality there are empty cells in which a nonsignificant number of children fit, but the vast majority of the cells describe significant groups among the disadvantaged. Children within a given group can then be identified according to the subpopulation variables defined by the cells of the subpopulation matrix.

Cultural Group. The major subcultural groups of the disadvantaged have been identified as Black American, Mexican American, Puerto Rican, American Indian, and White American. Though fewer in number, members from other cultures such as Oriental, Polynesians, and Eskimos are also among the disadvantaged. Cultural group membership is here defined as a "collection of people considered both by themselves and by other people to have in common one or more of the following characteristics: (a) religion, (b) racial origin (determined by identifiable physical characteristics), (c) national origin, or (d) language or cultural traditions."[7] Some features of the cultural heritage of the Black American, Mexican American, Puerto Rican, and the American Indian conflict with the dominant American culture, making adjustment and acculturation difficult. The movement of many of these people to new locales in search of a better life has increased this problem.

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[7] J. Harding, B. Kutner, H. Proshansky and I. Chein, "Prejudice and Ethnic Relations," G. Lindzen (Ed.), Handbook of Social Psychology (Cambridge, Mass.: Addison-Wesley, 1954), pp. 1021-1061.

In the cities the disadvantaged have been confronted with life in an industrial urban society for which they were not prepared. Mainly from rural backgrounds, they lack education and job skills and are often discriminated against in employment and housing. Among the disadvantaged cultural groups that are moving to urban areas in substantial numbers are Black Americans from the rural South, whites from southern mountains, and Puerto Ricans from the islands. These groups have primarily migrated to northern industrial cities. Mexican Americans are moving to urban areas of the West and Middle West, and American Indians are slowly migrating from the reservations to the cities of the West in search of a better life.

It is not the purpose of the present paper to review the backgrounds of all the disadvantaged ethnocultural groups, but rather to establish the validity of this dimension.

The cultural roots of Black Americans were destroyed and a foreign culture forced upon them when they were brought to the United States as slaves. Slave status resulted in degradation of self-esteem and the deliberate destruction of the family unit. Within this system the male role was diminished while the female role was enhanced. In a society where Black Americans have been grossly relegated to an inferior status, these role differences for the average Black American have continued.[8] Although most Black American families today are headed by men, the proportion of families with female heads is much greater among blacks than among whites at all income levels, and has been rising in recent years. The Kerner report states that among families with incomes

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[8] H.J. Gans, "The Negro Family: Reflections on the Moynihan Report," Commonweal (1965, October 15), pp. 47-50. A. Kardiner and L. Ovesey, "The Social Environment of the Negro," S.W. Webster (Ed.), The Disadvantaged Learner: Knowing, Understanding and Educating (San Francisco: Chandler, 1966), pp. 141-160.

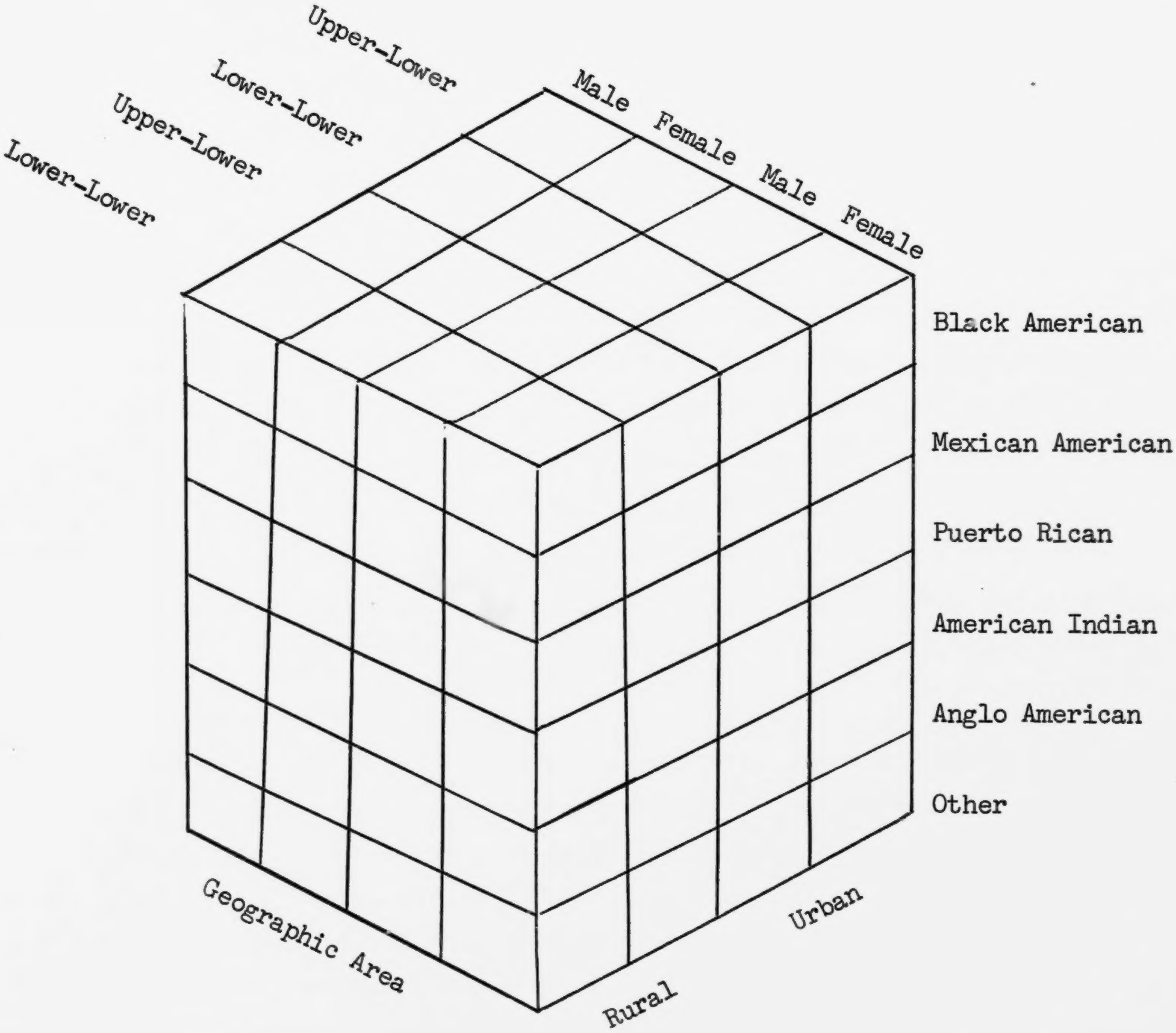
Upper-Lower
Lower-Lower
Upper-Lower
Lower-Lower
Male
Female
Male
Female
Black American
Mexican American
Puerto Rican
American Indian
Anglo American
Other
Geographic Area
Rural
Urban

Fig. 1--Subpopulation Matrix. Comprised of Five Dimensions: Cultural Group, Rural or Urban Locale, Geographic Area, Social Class and Sex.

under $3,000 in 1966, the proportion with female heads was forty-two percent for blacks but only twenty-three percent for whites.[9] As one could anticipate, the disadvantaged black family has therefore been described as an unstable matriarchy adapting to conditions imposed by society.[10]

The Mexican Americans in the United States came from a traditional, isolated, agrarian (patron-peon) economy. In the patron-peon system, much like the lord and vassal relationship of the Middle Ages, the peon labors on the farm in return for the patron assuming the responsibility for the physical, political, and economic welfare of the peon and his family. This pattern is rapidly dissolving and the Mexican Americans are having to move to find work, but the underlying cultural values remain. The people are present-oriented, dislike personal competition, and rarely take the initiative in a problem situation. In searching for complete economic and political security they tend to be blindly loyal to leaders with whom they identify.[11] The cohesive paternalistic family including a number of godparents and other non-blood relatives must be abandoned when the Mexican Americans move to cities or to seasonal crop farms in search of work. Not only is language a barrier, but because of the father's lack of skill he often is unable to get a job in the city. The wife, however, can usually find work. With the wife working and the father unemployed there are drastic role changes. Living in a new culture thus causes considerable stress in the family.[12]

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[9] O. Kerner, Report of the National Advisory Commission on Civil Disorders (New York: Bantam Books, 1968).

[10] J. Bernard, Marriage and Family Among Negroes (Englewood Cliffs, N.J., Prentice-Hall, 1966).

[11] C. Knowlton, "Patron-peon Pattern Among the Spanish Americans of New Mexico," S.W. Webster (Ed.), The Disadvantaged Child: Knowing, Understanding and Educating (San Francisco: Chandler, 1966), pp. 118-126.

[12] B. Valdez, "Implications of Spanish-American Culture on Family Life," (Unpublished paper, Disadvantaged Document ED002629, ERIC, U.S. Dept. of H.E.W.).

The Puerto Ricans come from an agricultural background similar to the Mexican Americans; however, in addition to a shift from a rural to an urban society and language difficulties, they are burdened with differences in racial identity. The codification of racial criteria in social structure of Latin America differs considerably from that in the United States. Among the Puerto Ricans, racial characteristics range from completely caucasoid to completely Negroid. Every Puerto Rican is aware of his position based on the color of his skin, but in Puerto Rico intermingling of people of different color and racial characteristics is common. In the United States the social structure concerning race is split into a black and white dichotomy while in Puerto Rico it is divided into three categories: black, intermediate, and white. The large number of Puerto Ricans in the intermediate group resent the Americans' assumptions about racial identity. This is among the sources of real conflict for Puerto Ricans who come to the United States.[13]

The social character and values of American Indian societies fostered the preservation of the status quo and the belief in external supernatural forces determining one's fate. An Indian family, even today, accumulating substantially more wealth than other members of the tribe is considered greedy. Tribal sharing and generosity have laid the foundation for a socialist society lacking entrepreneurial incentives. Aspects of the cultural traditions among the American Indians, therefore, make it difficult for them to function in American society.[14]

Other factors related to these and other cultural groups are certainly pertinent, but this is not intended to be an inclusive list. The validity of the dimension as a differentiating variable is clearcut.

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[13] E.S. Bonilla, "Social Structure and Race Relations," S.W. Webster (Ed.), The Disadvantaged Learner: Knowing, Understanding and Education (San Francisco: Chandler, 1966), pp. 104-117.

[14] G.D. Spindler and L.S. Spindler, "American Indian Personality Types and Their Sociocultural Roots," S.W. Webster (Ed.), The Disadvantaged Learner: Knowing, Understanding and Educating (San Francisco: Chandler, 1966), pp. 89-103.

Rural or Urban Locale. Rural or urban locale is included in the model for obvious reasons, some of which have been mentioned. Disadvantaged children from rural backgrounds show significant differences in school learning skills from their urban peers. Urban arbitrarily refers in our model to persons living in a place of 2,500 inhabitants or more, incorporated as cities, towns, boroughs and villages, or in diversely settled urban fringes around cities of 50,000 or more. The remainder of the population is classified as rural. The dichotomous definition of locale does not adequately describe the reality of a rural-urban continuum; rationales for other splits can undoubtedly be made.

Geographic Area. It seems that geographic area can be defined in terms as fine or as gross as one wishes. The problem stems from the fact that one set of variables does not apply equally well to all subgroups. For example, the North/South split may serve adequately in interaction with other dimensions to describe significantly different subpopulations of black Americans but the notion is inadequate for Mexican Americans or for Anglo-Americans. For the purpose of a general model, however, geographic differences seem pertinent enough to be given careful consideration.

Social Class. Although social class has been investigated for years no generally accepted definition or measurement has been developed. The various interpretations include a way of life, power over resources and people, reputation and esteem or a combination of objective properties including occupation, education and residence.[15] Hoffman and Lippitt reviewed the various concepts of social class;[16] Marx described it as man's relationship to the means of production;[17] Veblen considered consumption patterns the main indicator of social class;[18] Warner and Lunt defined social class in reference to other people's judgment of the families' prestige and esteem;[19] and Center suggested that an individual's self-judgment defined social class.[20] Hollinshead and Redlich modified an objective scale,[21] which was based on family properties developed by Warner, Meeker, and Eells.[22] Hollinshead's Index of Social Position used a weighted criteria of occupation of family head (weighted 9), residence (weighted 6), and education of family head (weighted 5) to identify five social class categories. Regardless of the social class index used, it may need to be further developed on the lower end of the scale since the model is focused on lower class.

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[15] B. Barber, Social Stratification (New York: Harcourt, Brace & Co., 1957).

The typological distinction has been made in the model between upper-lower and lower-lower class. This division of the lower class has been found in every major community study reflecting differences in "material well being, occupational, and educational opportunities, degree of personal and family stability, self and community perceptions, and integration with the larger society."[23] The lower-lower class has been characterized as suspicious, distrustful, uncertain of the future, and concerned with immediate gratification.[24] Children from the lower-lower class have been described as having difficulty forming words, quietly obedient, poorly nourished, and completely lacking confidence in their ability to master a problem.[25] The upper-lower class in contrast are semi-skilled or skilled workers with modest means who are described as hardworking, taxpaying, and family oriented. The ideal is high school graduation, but the norm is dropping out of school at sixteen. More secure economically than the lower-lower class, the upper-lower class are less secure morally or psychologically due to the pervasive anxiety about status and respectability among its members.[26] Upper-lower class children have more contact with both the mother and father, and the children tend to be more verbal than lower-lower class children.[27]

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[16] L.W. Hoffman and R. Lippitt, "The Measurement of Family Life Variables," P. Mussen (Ed.), Handbook of Research Methods in Child Development (New York: Wiley, 1960), pp. 945-1005.

[17] K. Marx, Capital (Chicago: Kerr, 1909).

[18] T. Veblen, The Theory of the Leisure Class (New York: Huebsch, 1918).

[19] W.L. Warner and P.S. Lunt, The Social Life of a Modern Community (New Haven: Yale University Press, 1941), Vol. I.

[20] R.T. Centers, The Psychology of Social Classes (Princeton: Princeton University Press, 1949).

[21] A.B. Hollinshead and C.F. Redlich, Social Class and Mental Illness: Community Study (New York: Wiley, 1958).

[22] W.L. Warner, M. Meeker and K. Eells, Social Class in America (Chicago: Science Research Associates, 1949).

The split between upper-lower and lower-lower class characteristics is not to deny lower class commonalities. The following is a modification of Keller's characteristics of lower class life: (a) low community status and having to purchase on credit, (b) economic potential highest in youth, (c) residence in less desirable neighborhoods in inadequate dwellings, (d) little participation in formal organizations, (e) high proportion of disadvantaged in cultural minority groups.

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[23] S. Keller, The American Lower Class Family (Albany, N.Y., New York State Division for Youth, 1966).

[24] Ibid.

[25] E. Pavenstedt, "A Comparison of the Childrearing Environment of Upper-lower and Lower-lower Class Families," American Journal of Orthopsychiatry (1965), 35, 89-98.

[26] S. Keller, The American Lower Class Family (Albany, N.Y., New York State Division for Youth, 1966).

[27] E. Pavenstedt, "A Comparison of the Childrearing Environment of Upper-lower and Lower-lower Class Families," American Journal of Orthopsychiatry (1965), 35, 89-98.

Sex Differences. The sex of the child is included in the subpopulation matrix of the model because male and female roles in the lower class are more clearly distinguished than in the middle class.[28] Also, sex differences have been demonstrated in school learning skills such as arithmetic reasoning, spatial orientation, perceptual speed, accuracy, memory, numerical computation, and verbal fluency.[29]

Psycho-educational Dimensions. Selected on the basis of their significance for influencing school learning and being shaped by the environment the psycho-educational dimensions have been identified as: (1) general intelligence, (2) language skill, (3) conceptual ability, (5) motivation, and (6) self-concept. According to the model these dimensions will be measured and profiled for subpopulations of the disadvantaged.

General Intelligence. General intelligence is the most comprehensive of the psycho-educational dimensions of the model. As it is used in the model, intelligence is a multifactor construct derived from a set of measurement operations to designate levels of mental functioning.[30] Because of the long standing interest among psychologists and educators in the measurement of intelligence, there is substantially more research available on general intelligence than the five other psycho-educational dimensions of the model.

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[28] J. Kagan, "Acquisition and Significance of Sex Typing and Sex Role Identification," M.L. Hoffman and L.W. Hoffman (Eds.), Review of Child Development Research (New York: Russell Sage Foundation, 1964), Vol. I, 137-163.

[29] A. Anastasi, Differential Psychology (New York: Macmillan, 1958).

[30] D.P. Ausubel, Theory and Problems of Child Development (New York: Grune and Stratton, 1958).

The development of general intelligence is a complicated process and recently many of the established tenets are being reexamined. Hunt's provocative book Intelligence and Experience rejects the old assumptions of fixed intelligence and predetermined development.[31] The crucial role of early experience is emphasized and he indicates that going up the phylogenetic scale increases the importance of the early environment. The differential experiences of a cultural group, rural or urban locale, social class, and sex, as outlined in the subpopulation matrix, have profound effects on children's intelligence.

Lesser, Fifer, and Clark's comprehensive study of mental abilities of children from different social class and cultural groups is most pertinent here.[32] In their study 320 first grade children from Jewish, Black-American, Puerto Rican, and Chinese backgrounds were divided into middle and lower class groups based on the occupation and education of the head of the household and the type of dwelling. The results suggested subcultural differences in both the absolute level of each mental ability (including verbal ability, reasoning, numerical facility, and space conceptualization) and the patterns among these abilities. Social class and ethnicity interact to affect the absolute level of each mental ability, but not the pattern among these abilities. Their findings suggested that Jewish children were superior in verbal ability and black children were relatively inferior on spatial and numerical tasks and average on verbal ability. The Puerto Ricans were weakest of the four on verbal quality, while the Chinese children in the sample scored highest on spatial conceptualization. This study has been replicated in Boston with duplicate results for ethnic groups comparable to the original New York sample.[33] The results then would seem to be unequivocal that various cultural groups foster the development of different patterns of mental abilities.

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[31] J. McV. Hunt, Intelligence and Experience (New York: Ronald Press, 1961).

[32] G. S. Lesser, G. Fifer and D. Clark, "Mental Abilities of Children from Different Social-class and Cultural Groups," Monographs of the Society for Research in Child Development (1965), 30.

Two particular generalizations should be made concerning the performance of black children on intelligence tests. Black children score lower than white children and as the black child gets older his measured intelligence decreases. Deutsch and Brown examined the scores of 543 urban school children stratified by race, social class, and grade level on the Lorge-Thorndike intelligence test.[34] They found that black children scored lower than white children regardless of social class. As a result of the cumulative effects of deprivation, the trend of the low I.Q.'s for black children intensified over time. Other researchers have also found this phenomena among black children. In a study of 1800 black elementary school children, there was a negative correlation between age and I.Q.; at five years old the mean I.Q. was 86, while at thirteen the mean I.Q. was 65.[35] Osborne, in a longitudinal study of racial differences and school achievement, obtained similar results.[36] There was two years difference in mental ability at grade six and four years difference at grade ten between white and black children. Finally, fitting into the developmental picture, the intelligence difference between black and white infants was shown to be less than when the children grow older.[37]

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[33] S.S. Stodolsky and G. Lesser, "Learning Patterns in the Disadvantaged," Harvard Educational Review (1967), 37, 546-593.

[34] M. Deutsch and B. Brown, "Social Influences in Negro-white Intelligence Differences," Journal of Social Issues (1964), 20:24-35.

[35] W.A. Kennedy, V. Vernon, and J. White, "A Normative Sample of Intelligence and Achievement of Negro Elementary School Children in the Southeastern United States," Monographs of the Society for Research in Child Development (1963), 28(b).

[36] R.T. Osborne, "Racial Differences in Mental Growth and School Achievement: A Longitudinal Study," Psychological Reports (1960), 7:233-239.

A number of researchers have attempted to provide a tenable basis for these differences. Klineberg in an analysis of the problem reaffirmed the lack of evidence to support the contention that genetic differences exist between black and white children.[38] Not nearly enough is known about the influence of heredity, but the evidence points clearly in the direction of environmental causation. Two ways in which the environment of the black child can lower his measured intelligence have been suggested: first "it can act to deter his actual intellectual development by presenting him with such a constricted encounter with the world that his innate potential is barely tapped," and secondly "it can act to mask his actual functioning intelligence in the test situation by not preparing him culturally and motivationally for such a task."[39]

Mexican American children, along with Puerto Ricans and Orientals, often learn English as a second language. As might be expected, they perform poorly on verbal items. Information from a recent descriptive report of Head Start children's performance on the Stanford-Binet indicated that children in the rural south or from non-English speaking groups (Mexican Americans, Puerto Ricans, and Indians) did less well than other disadvantaged groups.[40] In one of the few studies specifically on the intelligence of Mexican American children, Jensen found that lower I.Q. Anglo-American children were poorer learners than their Mexican American counterparts.[41] Intelligence tests predicted immediate recall, serial learning, and paired-association learning of familiar and abstract objects quite well in the Anglo-American group, but not among the Mexican American children.

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[37] R. M. Dregor and K.S. Miller, "Comparative Psychological Studies of Negroes and Whites in the United States," Psychological Bulletin (1960), 57, 361-402.

[38] O. Klineberg, "Negro-white Differences in Intelligence Test Performance: A New Look at an Old Problem," American Psychologist (1963), 18:193-203.

[39] T. Pettigrew, "Negro American Intelligence: A New Look at an Old Controversy," Journal of Negro Education (1964), 33:6-25.

In a study of the effects of bilingualism upon intelligence test performance, Anastasi reported 176 Puerto Rican children as a group to have fallen considerably below the test norms on the Cattell Culture Free Intelligence Test even though the test was administered in both English and Spanish.[42] This work is supported by Lesser, Fifer, and Clark, who also found Puerto Rican children weak in verbal ability.[43]

The concern for culture free testing is a key issue in any proposed effort in this area, but researchers are moving toward better measures of the nature of children's abilities based on and couched within their own cultural milieus. As

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[40] M.G. Cline and A.S. Dryer, "Establishment of Regional Head Start Research and Evaluation Centers--A Descriptive Report of the Evaluation Design, Population and Program Characteristics and Pre-test Data of the Full Year 1967 Evaluation of Project Head Start," (Office of Economic Opportunity, 1968).

[41] A.R. Jensen, "Learning Abilities of Mexican-American and Anglo-American Children," California Journal of Educational Research (1961), 12, 147-159.

[42] A. Anastasi and F.A. Cordova, "Some Effects of Bilingualism upon the Intelligence Test Performance of Puerto Rican Children in New York City," Journal of Educational Psychology (1953), 44:1-19.

[43] G.S. Lesser, G. Fifer and D. Clark, "Mental Abilities of Children from Different Social-class and Cultural Groups," Monographs of the Society for Research in Child Development (1965), 30.

Stodolsky and Lesser point out

> ...the ability (aptitude) versus achievement distinction has been attenuated. Intelligence tests must now be thought of as samples of learning based on general experiences. A child's score may be thought of as an indication of the richness of the milieu in which he functions and the extent to which he has been able to profit from that milieu.[44]

Generalizing research results to Indian children, for example, has many of the pitfalls of broad statements about characteristics of disadvantaged children. There are wide variations in the cultural patterns of different tribes ranging from the Hopi of the Southwest to the Seminole of Florida. Research dealing with Sioux, Hopi, Zuni, Zia, Navaho, and Papago Indian children's performance on the Goodenough Draw-A-Man Test shows no inferiority to white norms, but it has also been demonstrated on the Goodenough Draw-A-Man Test that Indian boys do significantly better than girls; this was partially accounted for by the fact that graphic art is traditionally a masculine interest among the Indians.[45] Klineberg in a study of 120 Yakima Indian children and 110 white children on the Pinter-Patterson series found a "qualitative" rather than a "quantitative" difference in the behavior of the two groups. The white children were quicker but the Indian children made fewer errors.[46] Though speed is a salient characteristic of American life it has not penetrated the subcultural patterns of many groups. The results of work by Spellman using a Color-Form, Size reference measure reinforces these findings.

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[44] S.S. Stodolsky and G. Lesser, "Learning Patterns in the Disadvantaged," Harvard Educational Review (1967), 37:546-593.

[45] W. Dennis, "The Performance of Hopi Children on the Goodenough Draw-A-Man Test," Journal of Comparative Psychology (1942), 34: 341-348. R.J. Havighurst, M.K. Gunther and I.E. Pratt, "Environment and the Draw-A-Man Test: The Performance of Indian Children," Journal of Abnormal and Social Psychology (1946), 41: 50-63.

[46] O. Klineberg, "Racial Differences in Speed and Accuracy," Journal of Abnormal and Social Psychology (1927), 22:273-277.

Studies of the mental abilities of Japanese and Chinese American children have shown that they do less well on the verbal parts of intelligence tests as a result of bilingualism, but they excel in acuity of visual perception, recall, spatial relation, and in spatial conceptualization. This to some degree has been attributed to cultural patterns among oriental groups stressing art and handicrafts.[47]

Attempts to separate rural and urban factors relating to differences of intelligence in children are somewhat less than clear. Three ideas draw substantial support: (a) rural children tend to have lower measured intelligence scores, especially on tests which require speed and have many verbal items, (b) the more isolated the rural child, the lower his intelligence score will be, and (c) the intelligence test score does not necessarily reflect the rural child's learning ability.

Comparatively lower scores, especially on group intelligence tests, have characterized the performances of rural children.[48] Taking a closer book at the problem, Sherman used a battery of nine tests including the Stanford-Binet, Goodenough's Draw-A-Man Test, the Knox Cube Test, and the Pinter Cunningham Primary Mental Test and found the more isolated the community from which rural children were drawn, the lower the scores on the intelligence tests.[49] He also noted that the children's scores were somewhat higher on tests when the tempo was the slowest. In addition, Shepard's study of non-verbal abilities of matched rural and urban children showed that rural children were superior in mechanical ability while the urban children scored highest on the verbal ability and tests requiring speed. The author concluded that "the environmental milieu (sic) in which a child is reared may influence the development of certain skills, abilities, and fields of knowledge most significant and valuable for those living in that specific geographic or source area."[50] Lower performance of rural children is not an immutable situation. Boger studied the effects of perceptual training on the intelligence test scores of rural elementary school children. He concluded that the extent of improvement on the intelligence test scores as a result of training indicates that scores from intelligence tests are not representative of rural children's actual ability.[51] Furthermore, Wheeler's studies of 3,252 East Tennessee mountain children indicated a promising trend that through the improvement of the economic, social, and educational status of the mountain area between 1930 and 1940, an average I.Q. gain of ten points resulted among the school children.[52] As a final note, Anastasi on the basis of research suggested that the rural-urban test performance gap is shrinking.[53] This change may partly be the result of population shifts and partly from major improvements in rural living. The specific factors may be the gradual change in farms with the replacement of farm laborers by machinery as well as the substantial increase in facilities for education, communication, and transportation available to the rural population.

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[47] M.L. Darsie, "Mental Capacity of American-born Japanese Children," Comparative Psychology Monograph (1926), 15. G.S. Lesser, G. Fifer and D. Clark, "Mental Abilities of Children from Different Social-class and Cultural Groups," Monographs of the Society for Research in Child Development (1965), 30.

[48] I.J. Lehmann, "Rural-urban Differences in Intelligence," Journal of Educational Research (1959), 53:62-68.

[49] M. Sherman and C.B. Kay, "The Intelligence of Isolated Mountain Children," A. Anastasi (Ed.), Perspectives in Psychology (New York: Wiley, 1965), 195-201.

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[50] E.L. Shepard, "Measurement of Certain Nonverbal Abilities of Urban and Rural Children," Journal of Educational Psychology (1942), 33:458-462.

[51] J.H. Boger, "An Experimental Study of the Effects of Perceptual Training on Group IQ Scores of Elementary Pupils in Rural Upgraded Schools," Journal of Educational Research (1952), 46:43-53.

[52] L.R. Wheeler, "The Intelligence of East Tennessee Mountain Children," Journal of Educational Psychology (1932), 23:351-370. L.R. Wheeler, "A Comparative Study of Intelligence of East Tennessee Mountain Children," Journal of Educational Psychology (1942), 33:321-334.

[53] A. Anastasi, Differential Psychology (New York: Macmillan, 1958).

The intelligence test scores of lower class children have been established by many researchers as lower than those of middle class children.[54] On the average the test score difference is about twenty points regardless of the social class index used. Recently, however, there have been some pertinent findings about lower class and its effect on intelligence.[55] The cumulative deficit hypothesis and the relationship between intelligence and learning ability emphasize the profound effect of verbal learning on intelligence in lower class children. Under conditions of environmental deprivation, as often exist in the lower class, the child's measured intelligence declines over time. This trend in intellectual ability has been used to support the cumulative deficit hypothesis. Children from disadvantaged homes who had low I.Q. scores in first grade had lower I.Q. scores when they were retested in fifth grade. They had missed the basic learning skills, particularly verbal skills, which were necessary for transition from one learning level to the next; and instead of cumulative learning they suffered from a cumulative deficit. Jensen took a closer look at the differences in learning ability among slow learners five to ten years old in different socio-economic and cultural groups. He found that in "culturally non-deprived children, there is a good correlation between learning ability and IQ, measured by standard tests. In culturally deprived children, IQ tells little about learning ability of the nonverbally mediated variety. Deprived children seem to be 'normal' in learning ability, but have failed to learn the verbal mediators that facilitate school learning."[56] Jensen's findings, concerning the learning ability of lower class children not being reflected in an intelligence test, corresponded to his findings on Mexican American children[57] and Boger's conclusions about the intelligence performance of rural children referred to previously.[58]

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[54] V.P. John, "The Intellectual Development of Slum Children: Some Preliminary Findings," American Journal of Orthopsychiatry (1963), 33:813-822. H.E. Jones, "The Environment and Mental Development," L. Carmichael (Ed.), Manual of Child Psychology (2nd Ed., New York: Wiley, 1954), 631-696.

[55] M. Deutsch and B. Brown, "Social Influences in Negro-white Intelligence Differences," Journal of Social Issues (1964), 20:24-35. G.G. Wiener, R.V. Rider and W. Oppel, "Some Correlates of IQ Change in Children," Child Development (1963), 34(1), 61-67.

Sex differences in mental abilities, with the exception of verbal fluency favored in girls, are less evident at the younger age levels. It seems reasonable that the differences that appear later are for the most part culturally determined.[59]

In summary, the subpopulations interactively impinge on the development of children's mental abilities. Although there are similarities, disadvantaged children from each ethnocultural group which has a semblance of a homogeneous life style fosters the development of specific mental qualities. Rural locale and lower class tend to be associated with lower test scores particularly on verbal subtests and tests requiring speed. If the performance of a lower class child on an intelligence measure was poor in the first grade, then it is very likely that the child's measured intelligence will be even lower on future tests.

Language Skill. The close relationship of language skill and learning ability is common knowledge. Language skill, as used in this model and as generally conceived in preschool work, is, of course, more than that measured on the verbal section of an intelligence test. As used in the model, language skill is a socially conditioned set of communication variables such as phonetic structure, syntactic structure, and complexity. In addition, it should be recognized that there is both a covert and overt dimension to language and that perceptual and conceptual abilities as well as intelligence are reflected in language skill.

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[56] A.R. Jensen, "The Role of Verbal Mediation in Learning as a Function of Age and Cultural Background," Research Relating to Children (U.S. Dept. of H.E.W., Welfare Administration, Washington: U.S. Government Printing Office, 1962), No. 15.

[57] A.R. Jensen, "Learning Abilities of Mexican-American and Anglo-American Children," California Journal of Educational Research (1961), 12, 147-159.

[58] J.H. Boger, "An Experimental Study of the Effects of Perceptual Training on Group IQ Scores of Elementary Pupils in Rural Upgraded Schools," Journal of Educational Research (1952), 46:43-53.

[59] D.P. Ausubel, "Theory and Problems of Child Development" (New York: Grune and Stratton, 1958).

Learning one language in the family and another at school is a problem faced by many disadvantaged children from non-English speaking cultural groups (Mexican American, Puerto Rican, and Indian). This linguistic bifurcation among the disadvantaged tends to have a negative influence on the child's skill in both languages.

Lower class children have been described as having various kinds of language related problems. Some of Deutsch's initial postulations that children from a noisy environment in which directed and sustained speech stimulation are rare would be deficient in the recognition of speech sounds and would have difficulty in skills which required auditory discrimination, such as reading, have been extensively supported.[60] Other findings indicate that lower class children are poorer readers and also have poor auditory discrimination. Language development and use have a universal sequence: listening, speaking, reading and writing.[61] Therefore, in view of the deficiency caused by poor auditory skill in the foundation of language development, the number of communication difficulties among lower class children is not unexpected. Milner investigated the background of black children who scored low on a reading readiness test.[62] These children were predominantly from lower class homes where there were few books and little interaction between parents and children. Lower class children used fewer words, nonstandard English, and short, less complex sentences. Figurel found, for instance, the vocabulary of a disadvantaged child is significantly less than that of the middle class child and that the disadvantaged often use nonstandard English.[63] Thomas investigated the sentence development and vocabulary usage of lower class children and found that lower class children use fewer words in sentences and failed twenty to fifty percent of the vocabulary from five word lists recommended for the primary grades.[64]

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[60] Martin Deutsch, "Facilitating Development in the Pre-school Child: Social and Psychological Perspectives," Merrill-Palmer Quarterly, (1964), 10(3), 249-263.

[61] E.S. Newton, "Planning for the Language Development of Disadvantaged Children and Youth," Journal of Negro Education (1964), 33:264-274.

[62] E. Milner, "A Study of the Relationship between Reading Readiness in Grade One School Children and Patterns of Parent Child Interaction," Child Development (1951), 22, 96-112.

The relationship between language and conceptual ability in lower class children has been investigated by many researchers. Bernstein identified the quality of the language used in the home with social class.[65] He identified two linguistic codes, restricted and elaborated. Restricted codes are simple, short, condensed and lack specificity, while elaborated codes are grammatically more complex and pertain to a particular situation. The middle class child is able to use both forms, but the lower class child is generally limited to restricted codes. For the disadvantaged child this means that he is isolated linguistically and perhaps conceptually from the cultural mainstream. Delay in the acquisition of certain formal language forms (elaborated code) makes it difficult for children to move from concrete to abstract thought.[66] Deutsch, studying the relationship between socio-economic status, race, grade level, and language variables, found deficiencies based on race and class for measures of abstract and categorical use of language as distinguished from denotation and labeling.[67] (Supporting the cumulative deficit hypothesis, language deficits identified at first grade were more serious at fifth grade.) Assuming that children test their notions about words primarily through interaction with more mature speakers, John and Goldstein suggested that the amount of interaction varies from one social class to another and that the shift from labeling to categorizing also varies with the social class.[68] The results of their study indicated that lower class children had a limited scope of verbal interaction in the home, were deficient in language development, and were impeded in their ability to categorize in terms of explicit statements of concepts.

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[63] J.A. Figurel, "Limitations in the Vocabulary of Disadvantaged Children: A Cause of Poor Reading," Improvement of Reading Through Classroom Practice (Newark, Del.: International Reading Association, 1964), 9:160-175.

[64] D.R. Thomas, "Oral Language, Sentence Structure and Vocabulary of Kindergarten Children Living in Low Socio-economic Urban Areas," Dissertation Abstracts (1962), 23, 104(3).

[65] B. Bernstein, "Elaborated and Restricted Codes: Their Social Origins and Some Consequences," American Anthropologist (1964), 66:1-34.

The descriptions of specific language skill deficits for the "disadvantages" as a group are becoming known; however, the dearth of information concerning the etiology of specific problems for specific subcultural groups remains a distinct stumbling block to meaningful intervention.

Conceptual Ability. Conceptual ability is used here in a broad sense referring to skill in organizing and reducing the ambiguity and imprecision of the environment impinging on the senses. The individual acquires concepts through a complex learning process which is reciprocal between the individual and the environment.

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[66] D.P. Ausubel, "How Reversible Are the Cognitive and Motivational Effects of Cultural Deprivation?" Urban Education (1964), 1:16-38.

[67] M. Deutsch, "The Role of Social Class in Language Development and Cognition," American Journal of Orthopsychiatry (1965), 35:78-88.

[68] V.P. John and L.S. Goldstein, "The Social Context of Language Acquisition," Merrill-Palmer Quarterly (1964), 10(3), 265-275.

> Environmental sensations stimulate the person and various sensations eventually become intensified, named, and organized. Through his increased ability to discriminate and to generalize he develops schemata. In so doing, the individual becomes increasingly emancipated from the perceptual and sensory aspects of the environment and is able to approach it in a conceptual way.[69]

The ability to use concepts by thinking of problems in terms of symbols and classes is seen by Bruner as the initial step in efficient learning, followed by searching for a solution, taking the initiative to solve the problem, and persisting when the problem is difficult.[70]

It is also apparent that conceptual thinking is required for such basic school learning tasks as generalizing, transferring learning, and reading. Obviously, conceptual ability is an essential psycho-educational dimension to include in any profile of learning predictions and the specific aspects of conceptual ability might be level of abstraction and cognitive style.

Level of differentiation and abstraction refers to gross differences in the development of concepts. Cognitive style according to Kagan, Moss and Sigel is a term which refers to the "stable individual performances in mode of perceptual organization and conceptual categorization of the external environment."[71] Level of abstraction, although important, does not account for the cognitive variation of children at the same age with similar I.Q.'s according to Kagan and others. In addition, the concepts a child acquires are affected by the predisposition he shows to attend to particular features of the environment.[72] It is presumed that this predisposition of cognitive style will influence the kind of content a child will employ in evolving his concepts.[73]

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[69] I.E. Sigel, "The Attainment of Concepts," M.L. Hoffman and L.W. Hoffman, Review of Child Development Research (New York: Russell Sage Foundation, 1964), Vol. I, 209-248.

[70] J. Bruner, "Learning about Learning: A Conference Report," Cooperative Research Monograph (1966), No. 15.

[71] J. Kagan, H.A. Moss, and I.E. Sigel, "Psychological Significance of Styles of Conceptualization," Monographs of the Society of Research in Child Development (1963), 28, 73-112.

Kagan has explored the cognitive implications of impulsive cognitive style in lower class children. He suggested that reflective cognitive style is necessary for analytical thinking.[74] The child must reflect on alternatives and analyze visual stimuli (delay discrimination) to function analytically. The impairments of disadvantaged children may arise from the lack of opportunities to develop reflective attitudes. In empirical studies Kagan has demonstrated that impulsivity in contrast to reflectivity is associated with errors in reading and inductive reasoning tasks.[75]

The ability to transform the concrete to symbolic terms is basic for conceptual thought. Disadvantaged children, because of a tendency to think in concrete terms, have a limited ability to make accurate generalizations from specifics and in transferring knowledge from one situation to another.[76]

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[72] H.F. Harlow, "Learning Set an Error Factor Theory," S. Koch (Ed.), Psychology: A Study of a Science (New York: McGraw-Hill, 1959), Vol. II.

[73] J. Kagan, H.A. Moss, and I.E. Sigel, "Psychological Significance of Styles of Conceptualization," Monographs of the Society of Research in Child Development (1963), 28, 73-112.

[74] J. Kagan, "Information Processing in the Child: Significance of Analytic and Reflective Attitudes," Psychological Monographs (1964), 78.

[75] J. Kagan, "Reflective-impulsivity and Reading Ability in Primary Grade Children," Child Development (1965), 36:309-628. J. Kagan, L. Pearson and L. Welch, "Conceptual Impulsivity Inductive Reasoning," Child Development (1966), 37:584-594(b).

[76] E.W. Gordon, "Counseling Socially Disadvantaged Children," F. Riessman, J. Cohen and A. Pearl (Eds.), Mental Health of the Poor (New York: Free Press of Glencoe, 1964), 275-282.

Also, differences have been found in the level of abstractness of cognitive style. Lower class children categorized pictures on the basis of concrete functional relationships while middle class children classified objects on the basis of abstracted common physical attributes. Even more significant was that lower class children were less able to classify the pictures of objects than the actual objects. The authors concluded that the lower class children had not yet acquired adequate representation of familiar objects.[77]

The most significant information, however, again would reflect the idiosyncracies of various ethnocultural groups of disadvantaged children in the nature and etiology of specific deficits. Sigel has completed much of his work with black children and finds differences between disadvantaged white and black kindergarten children in ability to classify pictorial representations. Suchman and Trebasso's work and more recent work by Spellman further open Pandora's box in the area by showing distinct differences in color from size preference in preschool children from varying ethnocultural backgrounds.[78] Little is known, however, about the etiology of these differences.

Perceptual Ability. Perception refers to the relationship between man and his environment and is conceptually between the sensations of classical psycho-physics and cognitive processes which are often under the rubric of concept development.[79] Perceptual ability is a term indicating the degree of skill necessary to assign meaning to various previously undefined sensory experiences. Sense experiences included in the model under perceptual ability depend on the scope of the project, but from the research reviewed on the disadvantaged auditory, visual, tactile, and kinesthetic abilities should be measured.

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[77] I.E. Sigel, L.M. Anderson and H. Shapiro, "Categorization Behavior of Lower and Middle Class Negro Preschool Children: Differences Dealing with Representation of Familiar Objects," *Journal of Negro Education* (1966), 35 (3), 218-229.

[78] C.M. Spellman, "Stimulus Preference Among Children of Different Ethnic Backgrounds," E.G. Willerman, V.S. Newton, and D.E. Bussis (Eds.), *A Digest of Research Activities of Regional Evaluation and Research Centers for Project Head Start* (Washington: Office of Economic Opportunity, 1968), 8.

[79] J. Gould and W.L. Kolb (Eds.), *A Dictionary of the Social Sciences* (New York: Free Press of Glencoe, 1964), 492.

The implications of perceptual ability for learning are clearly indicated by many researchers. Katz's findings indicated that inadequate auditory and visual discrimination are significantly associated with reading retardation.[80] Deutsch found that lower class children were inattentive to auditory stimuli and were, consequently, poor in auditory discrimination and reading skill.[81] Poor auditory discrimination has also been associated with negative effects on articulation.[82]

As with language skill and conceptual ability, comparable data on perceptual ability is lacking for children from disadvantaged cultural groups. Recent investigations indicated that there are significant differences among the disadvantaged cultural groups in visual perception,[83] and that children from various cultural backgrounds have characteristic stimulus preference.[84]

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[80] P.A. Katz, "Verbal Discrimination Performance of Disadvantaged Children: Stimulus and Response Variables," Child Development (1967), 38:288-342.

[81] C.P. Deutsch, "Auditory Discrimination and Learning: Social Factors," Merrill-Palmer Quarterly (1964), 10:277-296.

[82] D. Christine and C. Christine, "The Relationship of Auditory Discrimination to Articulatory Defects and Reading Retardation," Elementary School Journal (1964), 65:97-100.

[83] D. Dennis, "A Study of Visual Perception as Related to Cultural Deprivation: (unpublished paper, E. Grotberg (Ed.), background paper on research, February 14, 1968, Office of Economic Opportunity).

[84] C.M. Spellman, "Stimulus Preference Among Children of Different Ethnic Backgrounds," E.G. Willerman, V.S. Newton and D.E. Bussis (Eds.), A Digest of Research Activities of Regional Evaluation and Research Centers for Project Head Start (Washington: Office of Economic Opportunity, 1968), 8.

The research available on lower class children reveals that a lack of sensory stimulation when the children are capable of responding rather than physical defects of eyes, ears, or brain, is responsible for many perceptual problems.[85] Lack of stimulus familiarity among lower class children was found to affect visual discrimination[86] and may account for the fact that disadvantaged children had not acquired adequate representations of familiar objects to classify consistently the pictures of objects and the objects themselves.[87] Again, however, adequate profiling of differences for the inclusive ethnocultural groups known to be represented in the population of disadvantaged children is lacking.

Motivation. Although the potential for motivation may be innate, Ballif points out that its direction and intensity appear to be learned within the environment and determined by social and psychological models and values existing in the home.[88] Currently, there is mounting support for the importance of motivation as an indispensable condition for learning. Motivation is the energizing of activity to fulfill needs. Kagan identified broad classes of needs that motivate the child's learning academic skills: (a) the desire for nurturance, praise, and recognition, (b) the desire to increase his perceived similarity to a model individual, and (c) the desire for competence and self-worth.[89]

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[85] A.R. Jensen, "Social Class and Perceptual Learning," Mental Hygiene (1966), 50:226-239. M. Deutsch, "The Disadvantaged Child and the Learning Process," A.H. Passow (ed.), Education in Depressed Areas (New York: Teacher College of Columbia University Bureau of Publications, 1963), 163-179.

[86] M.V. Covington, "Some Effects of Stimulus Familiarization on Discrimination" (unpublished doctoral dissertation, University of California, 1962), B. Bloom, A. Davis and R. Hess (Eds.), Compensatory Education for Cultural Deprivation (New York: Holt, Rinehart and Winston, 1965).

[87] I.E. Sigel, L.M. Anderson and H. Shapiro, "Categorization Behavior of Lower and Middle Class Negro Preschool Children: Differences Dealing with Representation of Familiar Objects," Journal of Negro Education(1966), 35(3), 218-229.

[88] B. Ballif, "Exploration of Motivation to Achieve in Preschool Children," Annual Report, 1966-67 (University of Hawaii Head Start Evaluation and Research Center, Office of Economic Opportunity), 55-69.

In terms of a model for profiling psycho-educational dimensions of children, at least two aspects of motivation, it would seem, should be included: achievement motivation and incentives for school tasks. Achievement motivation here defined as the need for achieving in situations which involve standards of excellence, namely school, while important information would also be obtained if incentives that effectively motivate various groups of disadvantaged children were identified.

Limited research has been conducted on achievement motivation, incentives for achievement, and motivation characteristics of lower class children.[90] Rosen found that achievement motivation was rare among lower class children. Research on incentives has indicated that lower class children learn better with material incentives such as money and candy than nonmaterial incentives when compared to middle class children.[91] Ausubel suggested the use of intrinsic motivation for learning, based retroactively on achievement, as more valid and longer lasting than extrinsic motivation (incentives) for disadvantaged children.[92] Disadvantaged children have typically been characterized by their teachers as lacking motivation for school tasks.[93] According to Ballif, disadvantaged children have little curiosity or interest and react without any indication of an inner commitment or comprehension.[94] They express self-devaluation attitudes toward achievement, lack of interest in accomplishment and have no discernible drive toward goals or completion of tasks. This deficiency of motivation to achieve is further complicated by motives to achieve goals which are inappropriate and inconsistent with successful achievement in school.

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[89] J. Kagan, "Motivational and Attitudinal Factors in Receptivity to Learning," J. Bruner (Ed.), "Learning about Learning: A Conference Report," Cooperative Research Monograph (1966), 15:34-40.

[90] B.C. Rosen, "The Achievement Syndrome: A Psychocultural Dimension of Social Stratification," American Sociology Review (1956), 21:203-211.

[91] S. Klugman, "The Effect of Money Incentives vs. Praise Upon the Reliability and Obtained Scores of the Revised Stanford-Binet Test," Journal of Genetic Psychology (1944), 30:255-267. G. Terrel, Jr., K. Durkin and M. Wiesley, "Social Class and the Nature of the Incentive in Discrimination Learning," Journal of Abnormal Social Psychology (1959), 59:270-272.

The fact that disadvantaged children have been shown to have generalizable motivational predisposition says nothing of what lies behind these predispositions to behave in certain ways. With differential environments influencing the development of motivation in subpopulations of the disadvantaged, it is likely that general statements about the motivation of disadvantaged children may be grossly inaccurate. Surely we have little on which to base intervention procedures for specific groups.

Self-Concept. The child develops a self-concept through personal and social experiences. Initially from people in the home, and later from teachers and others in society, the child develops an image of the kind of person he is. We are defining self-concept as an organized configuration of the perceptions of the self which are admissable to an awareness.

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[92] D.P. Ausubel and P. Ausubel, "Ego Development Among Segregated Negro Children," A.H. Passow (Ed.), Education in Depressed Areas (New York: Teachers College Columbia University Bureau of Publications, 1963), 109-141.

[93] S. Keller, The American Lower Class Family (Albany, N.Y., New York State Division for Youth, 1966).

[94] B. Ballif, "Exploration of Motivation to Achieve in Preschool Children," Annual Report, 1966-67 (University of Hawaii Head Start Evaluation and Research Center, Office of Economic Opportunity), 55-69.

A profiling of self-concept across subcultures is included in the model for obvious reasons. The child with a poor self-concept is less able to cope with his environment. He is less curious, more anxious and tends to have difficulty making adequate adjustments to social situations. An unfavorable self-concept has been shown to be related to low aspirations and academic failures.[95]

Disadvantaged children have been described by many investigators as having poor self-concepts.[96] The vast majority of the research on the self-concept of disadvantaged children has been done on black children. In the lower class black family, girls are often preferred to boys and lighter skinned children to darker skinned children. The problems of establishing sex role identity in the lower class black family, where female head families are not uncommon, probably contribute to the poor self-concept of many black males. In doll play and peer choice studies, the negative connotations of identifying with the black race are evident.[97] It is apparent that black children are often confused regarding their feelings about themselves and their group. Some of what has been said about the self-concept of the black disadvantaged child applies to other cultural groups among the disadvantaged, but little evidence would lead to overt generalization. The paternalistic authoritarianism present in the Mexican American subculture, for example, would imply a different process of self-depreciation in disadvantaged children than that documented so well for the black population.

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[95] K.T. Hill and S.B. Sarason, "A Further Longitudinal Study of the Relation of Test Anxiety and Defensiveness to Test and School Performance over Elementary School Years," Monograph of the Society for Research in Child Development (1966), 3, 1-76. T.B. Edwards and S.W. Webster, "Correlations and Effects of Ethnic Group Identification," Research Relating to Children (U.S. Dept. of H.E.W., Welfare Administration, Washington: U.S. Government Printing Office, 1963), No. 17.

[96] Cynthia P. Deutsch, "Education for Disadvantaged Groups," (Disadvantaged Document ED002109 ERIC, U.S. Dept. of H.E.W., April, 1965). W.C. Kvaraceus, Negro Self-concept: Implications for School and Citizenship (New York: McGraw-Hill, 1965).

[97] K.B. Clark and M.P. Clark, "Racial Identification and Preference in Negro Children," E. Maccoby, T. Newcomb and E. Hartly (Eds.), Readings in Social Psychology (New York: Holt, 1958), 60. H.W. Stevenson and E.C. Stewart, "A Developmental Study of Racial Awareness in Young Children," Child Development (1958), 29:399-409.

The Identification of Process Variables

The process influence of significant environments joins the remaining dimension of the descriptive model. Stodolsky and Lesser in discussing new directions for research in learning with the disadvantaged stress that the answer to the question, "What does it mean in psychological-process terms to be a member of a given social class or subcultural group?" must be more effectively sought.

The fundamental influence of the home as the primary socialization agent on the psycho-educational dimensions of the child must become more focal in our research efforts. Aspects of the home which are directly related to the development of the psycho-educational dimensions obviously discussed are viewed here as process variables. The process variables in the home are therefore defined here as the dynamic mediators between the environment and the child.

Emphasizing the significance of the early environment for the development of intelligence, language skill, and conceptual ability Hunt defined cultural deprivation as a "failure to provide an opportunity for infants and young children to have the experience required for adequate development of those semi-autonomous central processes demanded for acquiring skill in the use of linguistic and mathematical symbols and for analysis of causal relationships."[98] Bloom interpreted data from one thousand longitudinal studies in an attempt to identify and explain stability of physical characteristics, intelligence, achievement, interests, attitudes, and personality at various ages and to determine the conditions under which the stability can be modified.[99] Among his general findings, supporting Hunt's statement, was the tremendous importance of the early environment. The home environment had its greatest effect on a characteristic, such as intelligence, during its most rapid period of growth. He specifically cited three factors of the environment that affect the development of general intelligence: (a) "the stimulation provided in the environment for verbal development," (b) "the extent to which affection and reward are related to verbal reasoning accomplishments," and (c) "the encouragement of active interaction with problems, exploration of the environment, and the learning of new skills." Influenced by Bloom's work, Wolf attempted to identify and measure the environmental process variables related to intelligence.[100] Specifically studied were the relationships of parental influence on the intelligence test performance of 60 fifth graders. A scale was devised from the aspects of the home hypothesized to be most relevant to general intelligence items. A significant correlation of .69 between the total score (summation of the scale scores) and the child's I.Q. was obtained. Greatest relationships between parent's influence and child's I.Q. were found for: (a) the parent's intellectual expectations for the child; (b) the amount of information the mother had about the child's intellectual development; (c) the opportunities provided for enlarging vocabulary; (d) the extent to which parents created situations for learning in the home; and (d) the extent of assistance given in learning situations related to school and non-school activities.

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[98] J. McV. Hunt, "The Psychological Basis for Using Pre-school Enrichment as an Antidote for Cultural Deprivation," Merrill-Palmer Quarterly (1964), 10, 209-248.

[99] B. Bloom, Stability and Change in Human Characteristics (New York: Wiley, 1964).

[100] R. M. Wolf, "The Identification and Measurement of Environmental Process Variables Related to Intelligence" (unpublished doctoral dissertation, University of Chicago, 1964).

Other researchers have stressed the nature of the family as significant in determining the intelligence measured on the child. Horton studied the background of 76 three-year-old black children split into the above-average and below-average groups on the Merrill-Palmer Scale of Mental Tests.[101] He found that the children in the lower group came from families where one-half the parents had less than an eighth grade education, no father had above a semi-skilled job, and there were less stable marriages and a larger number of siblings than in the high scoring group. The absence of a father in the home, according to Deutsch's study, adversely influenced the intelligence level of the children.[102] He hypothesized that this adverse effect was not so much the mere absence of the father as the diminution of organized family activity.

Sufficient interaction between adult and child is necessary for normal language development. The adult acts as a language model as well as socially motivating the child and giving him feedback on his initial mimicry of speech. McCarthy stressed the relationship between the amount and kind of contact the child has with his mother and the verbal skills of the child.[103] In the disadvantaged family, however, there is less parent-child interaction and less mother-child interaction than in middle class families.[104]

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[101] C.P. Horton and P.E. Crump, "Growth and Development XI: Descriptive Analysis of the Backgrounds of 76 Negro Children Whose Scores are Above or Below Average on the Merrill-Palmer Scale of Mental Tests," Journal of Genetic Psychology (1962), 100:255-265.

[102] Martin Deutsch and others, Communication of Information in the Elementary School Classroom (New York: Institute for Developmental Studies, 1964).

[103] D.A. McCarthy, "Affective Aspects of Language Learning," Newsletter (APA Division of Developmental Psychology, Fall, 1961), 1-11.

Recently Peterson and DeBord investigated home environment variables and their relation to achievement in white and black boys in a Southern city. Family composition, economic and social stability, social participation, cultural level of the home and other aspects of the family milieu were assessed. Separate multiple regression analyses for each subcultural group produced multiple correlations of .86 in the case of the black families and .75 in the case of the white. The particularly noteworthy finding, however, was the uniqueness of the set of variables for each group. Commonalities existed but the predictive sets were different for each group.

Another pertinent body of work in this regard was that completed by Hess and Shipman at the University of Chicago.[105] The relationships drawn unequivocally between mother's behavior and child's vocabulary level by this study do much to validate the obvious pertinence of family milieu to later learning. The observational nature of this work is also worth noting for as Stodolsky points out it is clear that:

> it will eventually be necessary to execute detailed observational studies of children in home environments if one wants to arrive at valid hypotheses about the dynamics of development in interaction with environment. The dearth of naturalistic data about children's behavior and concomitant environmental circumstances is most regrettable.[106]

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[104] J. Walter, R. Connor and M. Zunich, "Interaction of Mothers and Children from Lower-class Families," Child Development (1964), 35:433-440.

[105] R.D. Hess and V.C. Shipman, "Early Experience and the Socialization of Cognitive Modes in Children," Child Development (1965), 36:869-886.

[106] S.S. Stodolsky and G. Lesser, "Learning Patterns in the Disadvantaged," Harvard Educational Review (1967), 37, 546-593.

The importance of gaining more information about process variables as they are related to the idiosyncracies of significant subcultural socialization milieus is the critical portion of the proposed comprehensive model.

Summary

The behavioral model is divided into three major sections, subpopulations of the disadvantaged, psycho-educational dimensions of the child, and process variables in the environmental milieu. The sections of the model in summary are: subpopulations as cultural group, rural or urban locale, geographic area, social class, and sex; psycho-educational dimensions as intelligence, language skill, conceptual ability, perceptual ability, motivation, and self-concept; and, process variables as child rearing practices, reinforcement patterns, parental expectations, language patterns, family composition, stability, mobility, and the physical surroundings of the home.

To integrate the sections into a cohesive operational model the functions of the subpopulations, psycho-educational dimensions, and process variables must be related. The subpopulation matrix defines the sample of children for whom the psycho-educational dimensions must be measured and profiled. When the performances of various groups are profiled, process variables in the home must be better defined through increased usage and facilitation of observational technique.

The core of the model is an emphasis upon structures and processes over time within the early life of children that are unique to subcultural group, observable and profilable as a matrix of interacting process variables that mold the psycho-educational dimensions measurable at any point in the life of the individual. This tracing or origin or charting of an etiological process would give pertinent information that could be used prescriptively to mold intervention programs of meaning to aid disadvantaged children fill in deficits debilitating to potential educability. Lesser, Clark, *et al.*, have shown conclusively that ethnic groups show different profiles of psycho-educational dimensions and that these patterns of ability, although more powerful in the lower class, are stable across social class levels.[107]

The "disadvantaged" are a heterogeneous group of people and so long as we seek to define the term with generality each research foray will bring different and more confusing empirical results. We must have more refined models involving more refined assessment of process variables or environmental circumstances. Clusterings of process dimensions that can be shown to be related to meaningful psycho-educational dimensions would then identify disadvantagement in much more complex, idiosyncratic and meaningful terms.

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[107] G.S. Lesser, F. Fifer and D. Clark, "Mental Abilities of Children from Different Social-class and Cultural Groups," *Monographs of the Society for Research in Child Development* (1965), 30.

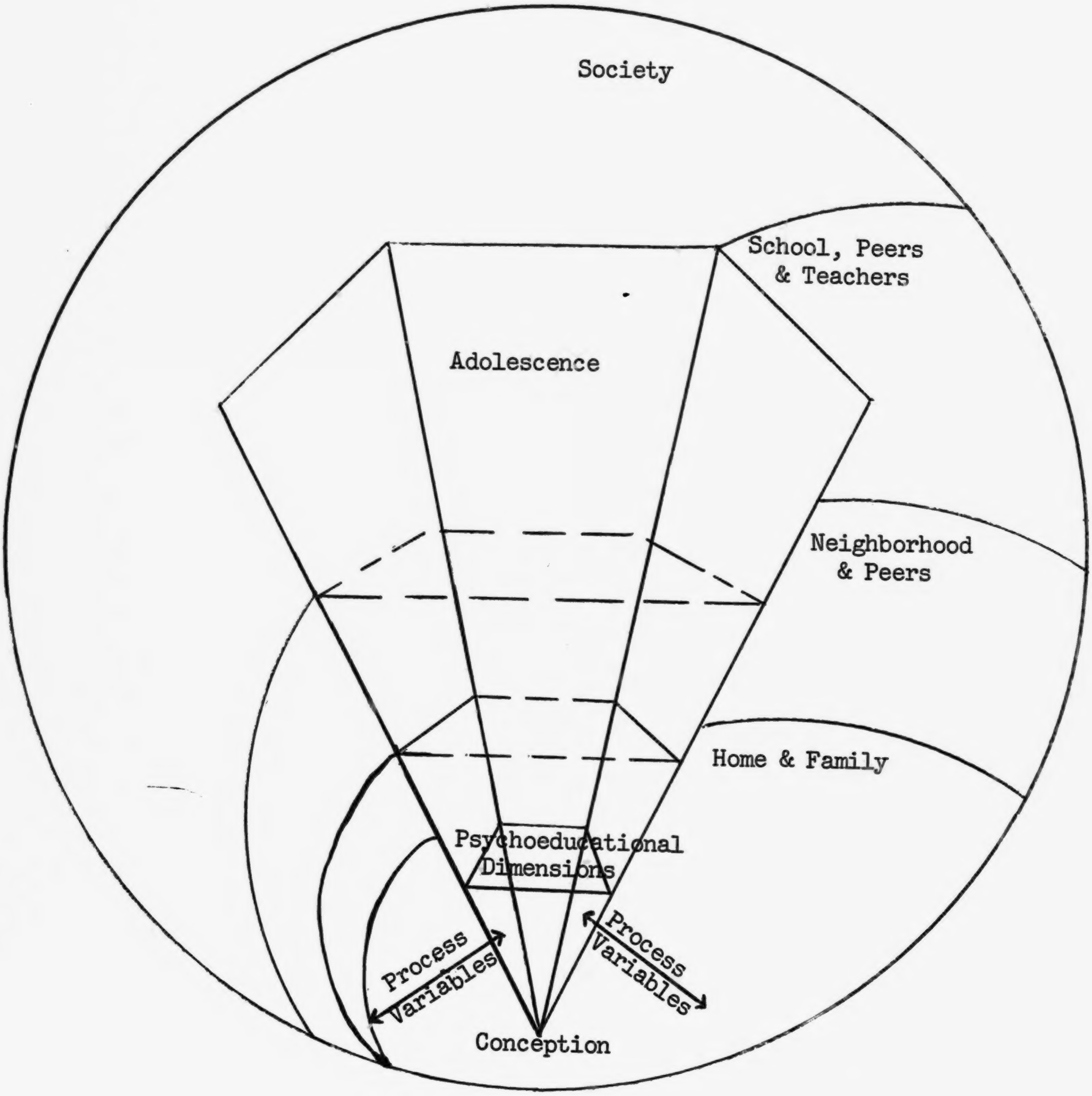
Society
School, Peers
& Teachers
Adolescence
Neighborhood
& Peers
Home & Family
Psychoeducational
Dimensions
Process
Variables
Process
Variables
Conception

Fig. 2--Environmental Schema

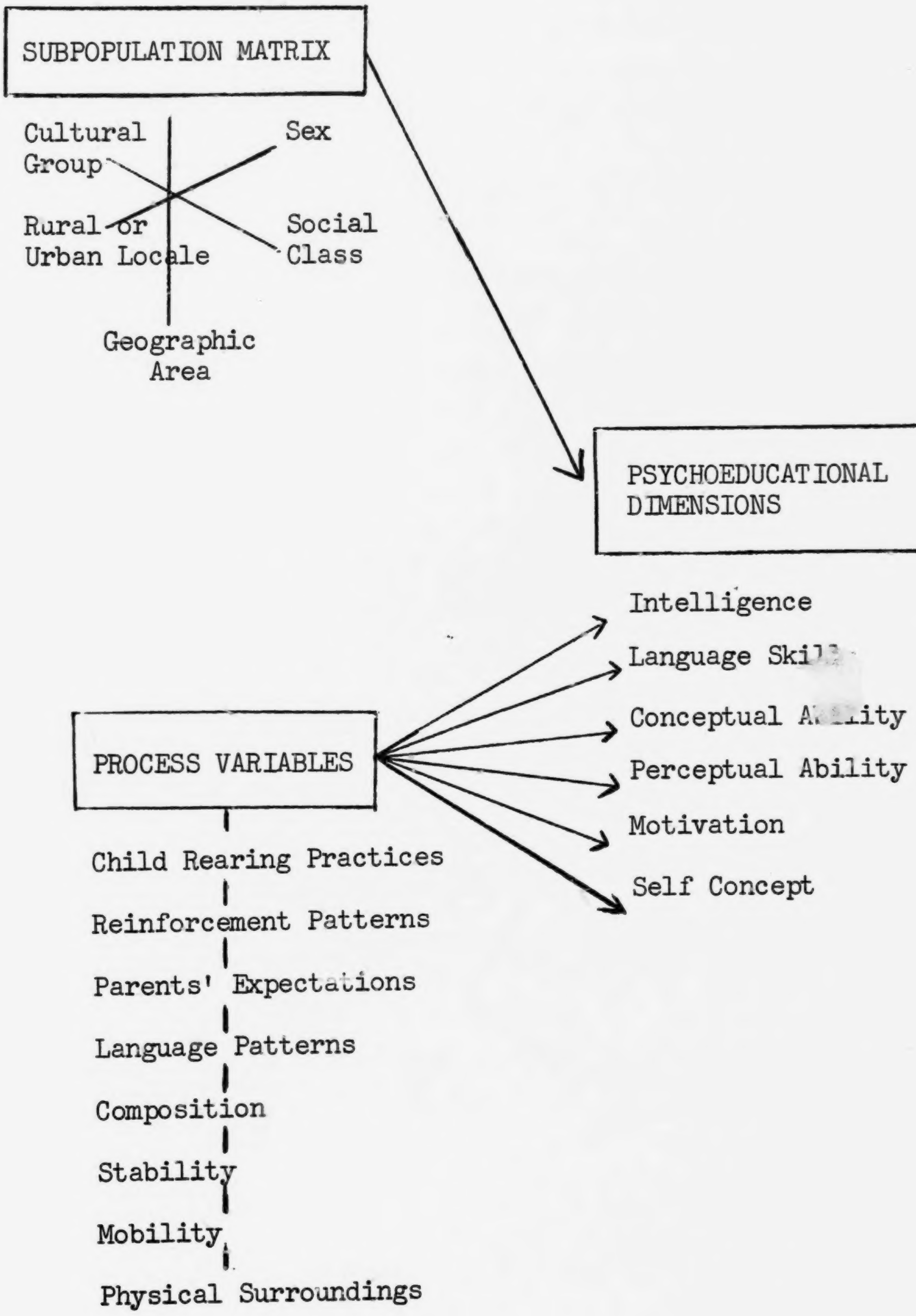
SUBPOPULATION MATRIX
Cultural Group
Sex
Rural or Urban Locale
Social Class
Geographic Area
PSYCHOEDUCATIONAL DIMENSIONS
Intelligence
Language Skills
Conceptual Ability
Perceptual Ability
Motivation
Self Concept
PROCESS VARIABLES
Child Rearing Practices
Reinforcement Patterns
Parents' Expectations
Language Patterns
Composition
Stability
Mobility
Physical Surroundings

Fig. 3--Behavioral Model

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THE EVALUATION OF EFFECTS OF EARLY EDUCATIONAL INTERVENTION ON INTELLECTUAL AND SOCIAL DEVELOPMENT OF LOWER-CLASS, DISADVANTAGED CHILDREN*

E. Kuno Beller
Temple University

Introduction

The main body of the present paper will be made up of an interim report of a longitudinal study which is still in progress. This study was undertaken to investigate the effects of early educational intervention on intellectual development and on the interplay between motivational and cognitive variables. The research has been concentrated on lower-class, disadvantaged children as they moved from nursery through the first phases of formal education in the primary grades. Specifically, the present paper will deal with the outcome of studies which employed two types of techniques in the measurement of intellectual functioning, that is, standardized tests and classroom grades, and two techniques in the measurement of motivation, ratings by participant observers and direct observation by nonparticipant observers. This paper therefore will be organized in two major parts, intellectual achievement and motivation.

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Intellectual Achievement

Intelligence Tests. One set of our measures of intellectual functioning consisted of three intelligence tests. The first of these, the Stanford-Binet, is primarily a verbal test; the second, the Goodenough Draw A Man Test, is essentially a non-verbal test; and the third, the Peabody Picture Vocabulary Test, lies somewhere between a verbal and a non-verbal test. Our study included three groups of children. Group I consisted initially of 60 lower-class, four-year-old Negro children who were selected randomly for enrollment in an experimental nursery program instituted in four public schools in the ghetto of North Philadelphia. This program started in the fall of 1963 and was much like the Get Set Program. Group II included five-year-old children who entered kindergarten in the same four schools in the fall of 1964 with no prior nursery experience; the criteria for their selection was that the two groups be comparable with regard to sex and chronological age. The third group consisted of six-year-old children who entered first grade in the same four schools in the fall of 1965 without any nursery or kindergarten experience. The criteria for selection of these children was the same as for Group II.

The research design specified that all these children be tested after they had entered school, and retested annually until they had completed at least four grades of elementary school. The initial testing was usually delayed until five months after the child had entered school, in order to avoid the contaminating effects of a strange setting, unfamiliarity with the testing situation, and the undue amount of stress manifested by many of these children when tested in a strange situation. This schedule was applied to the initial testing of children who entered nursery (Group I), and of the children who entered kindergarten without nursery (Group II). However, the initial testing of first grade children (Group III) was carried out very shortly; that is, several weeks after they entered school in order to make their scores comparable to those of the two other groups who had been tested in the later part of kindergarten. These scores were treated as an I.Q. measure obtained at kindergarten age. This difference in the timing of testing was eliminated in subsequent years.

First I shall discuss initial I.Q. scores of children entering school at different ages; that is, children in Groups I, II, and III.[1] The data in Table 1 indicates that there is no uniform tendency for initial I.Q. scores to increase or decrease with age. In other words, a child's I.Q. score apparently neither improves nor deteriorates whether he enters school at four, five, or six years of age. Analyses of variance yielded no significant difference on two of the tests. However, children in Group III (those who entered first grade without prior pre-school experience) had significantly lower scores on the Stanford-Binet. But this is only one of three tests and, as indicated earlier, the lower score might have been due to the fact that children in Group III were tested shortly after they entered school and thus had to perform in a less familiar and more inhibiting situation than children in Groups I and II.

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[1] Overall and complete statistical analyses will be carried out at the end of the fourth grade. While the overall statistical analysis is thus delayed to a later date, complete analysis for data up to and including the first grade have been presented in earlier reports: "The Impact of Pre-School Experience on Intellectual Development in Educationally Deprived Children," presented at the Annual Meetings of the American Educational Research Association, Chicago, Illinois, 1966, and "The Use of Multiple Criteria to Evaluate Effects of Early Educational Intervention on Subsequent School Performance," paper presented at the Annual Meetings of the American Educational Research Association, Chicago, Illinois, 1968. Those statistical analyses which have already been carried out will be indicated in the text wherever possible. The criterion for statistical significance, unless stated otherwise, is $p < .05$ throughout the paper.

The validity of this interpretation was of considerable importance to us, and, we believe, to evaluative studies of educational intervention generally. Therefore, we decided not to let the matter rest with an interpretation, but follow it up with an empirical test. We selected 25 first grade boys and 25 first grade girls who had entered first grade without pre-school experience in the same four schools in which the original study was carried out. The children were selected so as to be highly comparable in age, ethnic background, and social class to our original sample of children who had entered first grade without prior schooling. The testing of this new sample of children was carried out by three testers who had the same background and level of training as the testers of the initial group of children. The only difference between the initial Group III and the new Group III'was that the initial group, as indicated, was tested in the month of September, immediately following the child's entrance into first grade and the child's first exposure to school; whereas the new sample of children were tested five months after school entry.

It can be seen from inspection of Table 1 that our earlier interpretation has been supported by the subsequent empirical test. The average Stanford-Binet I.Q. score of the new Group III' rose sufficiently (85.8 to 89.2) to make any difference between these children and the children in Groups I and II negligible. A new set of analyses of variance were carried out between Groups I, II, and our new Group III'. It was found that for all three tests, i.e., Stanford-Binet, Goodenough Draw A Man and Peabody Picture Vocabulary, there was no significant difference between the average I.Q. scores of the three different groups. In other words, the I.Q. scores of children entering school at nursery, kindergarten, and first grade do not differ significantly from one another when all children are tested at the same time after school entry. Comparisons using the t test were performed between Groups III and III'. It was found that the average Stanford-Binet I.Q. scores between the two groups did not differ significantly.

Table 1--Initial average I.Q. scores of children entering school at Nursery (Group I), Kindergarten (Group II), and First Grade (Group III).

Stanford-Binet

Groups	N	Averages	S.D.
I	55	92.3	10.5
II	53	91.2	15.0
III	58	85.8	13.2
III'	50	89.2	13.3

Draw A Man

Groups	N	Averages	S.D.
I	49	96.0	19.3
II	52	97.0	17.7
III	58	98.7	18.2

Peabody Picture Vocabulary

Groups	N	Averages	S.D.
I	100*	75.0	17.3
II	45	79.4	14.8
III	58	74.5	17.0

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* Since this test (PPV) was not administered to the original group in 1963-64, the scores of children entering Nursery in the subsequent year (1964-65) were used in this cell.

Two conclusions may be drawn from these findings. The first conclusion bears on our own follow-up study. It is that our three experimental groups do not differ significantly from each other with regard to their initial I.Q. level. Therefore, subsequent differences between children in the three groups who entered school at different ages cannot be attributed to differences in the initial I.Q. level of the three groups. The second conclusion that can be drawn from our finding pertains to the general importance of the time of initial testing for pre- and post-studies. The time of pre-testing and the child's familiarity with the test situation is an important factor and must be controlled in order to obtain a valid measure of the effect of educational intervention when such a measure consists of the difference between pre- and post-test scores.

Table 1 reveals a second major finding, namely that the poorer performance of the disadvantaged compared to that of the middle-class child varies from test to test. For example, lower-class, disadvantaged pre-school children do not deviate markedly from an average score of 100 on the Goodenough Draw A Man Test on which our children receive an average I.Q. score of 97.3 (N=159). They deviate more strongly from the average score of 100 on the Stanford-Binet Test, on which our children receive an average I.Q. score of 89.7 (N=168). They deviate most on the Peabody Picture Vocabulary Test, on which our children receive an average I.Q. score of 76.8 (N=203). It is clear from these findings that any estimate of depressed intellectual achievement in lower-class deprived children must be qualified with reference to the test on which such an estimate is based.

It is important to note that the Peabody Picture Vocabulary Test, which yields the lowest I.Q. score for children has been widely used in studies of lower-class deprived children. This test incorporates certain very desirable features and should be improved if possible. It can be administered in a much shorter period of time and requires much less training compared to the

Stanford-Binet or other individually administered intelligence tests. Moreover, as we shall see below, the *Peabody Test* resembles the *Stanford-Binet* in a variety of ways.

This point leads to the next question, namely the correlation between these tests in those instances where more than one of them was administered to the same child or group of children. The intercorrelations among these tests are presented in Table 2. It can be seen from Table 2 that *Stanford-Binet* scores correlate highest with *Peabody Picture Vocabulary* scores and second highest with *Draw A Man* scores. By contrast, *Draw A Man* scores and *Peabody Picture Vocabulary* scores show very little correlation with each other. This finding suggests that the latter two tests measure different aspects of the same general area of intellectual functioning that is tapped by the *Stanford-Binet Test*. It is interesting to note that intercorrelations between tests tend to be somewhat higher at nursery age, but remain very stable on the subsequent age levels. In general, the intercorrelations in Table 2 suggest that one must be very careful in interpreting findings concerning intellectual achievement when these findings are based on different tests.

Table 2--Correlations (r) between Stanford-Binet (SB), Draw A Man (DAM) and Peabody Picture Vocabulary (PPV) Test I.Q.Scores in Nursery School, Kindergarten, and First Grade Children.

Test	Age Group		
	Nursery	Kindergarten	First Grade
	(N = 58)	(N = 148)	(N = 146)
SB with DAM	.50**	.40**	.28**
	(N = 26)		
SB with PPV	.50**	.63**	.61**
	(N = 44)		
DAM with PPV	.25*	.15	.13

** $p < .01$
* $p < .05$

We shall now evaluate the impact of pre-school experience on intellectual achievement in these three groups of children. The general conclusion that can be drawn from our findings (see Table 3) is that the impact of earlier educational intervention on intellectual achievement becomes evident after one year, and continues into the second, third and fourth year of our follow-up study. Moreover, the three different tests continue to differ from one another over time.

The Stanford-Binet Test reflects most clearly the effects of length of educational experience. Group I, which experienced schooling since nursery, retained its initial gain and advantage on each of the four age levels, while Group III, for whom formal schooling did not start until the first grade, remained consistently below the other two groups. The difference between the three groups, on Stanford-Binet scores, were significant on each of the four grade levels when tested by analyses of variance. The Peabody Picture Vocabulary Test was the second most sensitive test. Length of educational experience was associated with higher intellectual achievement scores in kindergarten and in the first grade, at which time these differences were statistically significant when tested by analysis of variance. These differences disappear in the third or fourth year of follow-up, or in the second and third grade. The Draw A Man Test was the least sensitive to effects of length of educational experience in the sense that the differences between our three groups never reached significance, although they began to fall in the predicted direction from first grade on, and began to approach significance in the third grade.

The data in Table 3 permit us to examine changes over time from kindergarten through the third grade, and take a look at the generalization one so often hears, namely that the disadvantaged child begins to fall behind from second grade on. Again, we benefit from the use of multiple tests or multiple criteria of intellectual achievement. A look at our data in Table 3 makes it clear that Stanford-Binet scores continue to

Table 3--Mean Scores of Three Measures of Intelligence (Stanford-Binet Test, Goodenough Draw A Man Test, and the Peabody Picture Vocabulary Test) for Three Groups of Children (Group I had Nursery and Kindergarten, Group II had Kindergarten only and Group III had neither Nursery nor Kindergarten) on Four Grade Levels

Groups	Grade Level							
	N	Kinder-garten	N	First Grade	N	Second Grade	N	Third Grade
				Stanford-Binet				
I	(39)	96.6	(39)*	98.3	(50)	97.7	(45)	97.6
II	(52)	91.2	(52)	94.3	(49)	93.1	(46)	93.1
III	(56)	86.1	(56)	89.8	(42)	89.3	(51)	89.0
				Draw A Man				
I	(38)	96.9	(38)	103.6	(50)	99.3	(46)	93.5
II	(51)	97.0	(51)	100.0	(49)	98.4	(45)	90.8
III	(56)	99.1	(56)	100.3	(42)	95.6	(50)	86.7
				Peabody Picture Vocabulary				
I	(35)	84.6	(35)	90.7	(50)	88.5	(46)	89.9
II	(44)	80.3	(44)	85.9	(49)	88.9	(45)	89.0
III	(55)	74.7	(55)	82.4	(42)	87.1	(51)	86.5

* We were able to recover 13 more children from this group for the retesting a year later.

increase into the first grade and Peabody Picture Vocabulary scores into the second grade before these scores stabilize. Thus, neither the Stanford-Binet scores nor the Peabody Picture Vocabulary scores show any indication of decline well into the third grade.

In striking contrast with the findings based on the Stanford-Binet Test and the Peabody Picture Vocabulary Test, there is an initial increase in the Draw A Man performance from kindergarten to first grade which is followed by a continuous decline throughout the second and third grade. It is interesting that this decline following first grade appears only on non-verbal tests in our study, whereas the two more verbal tests fail to show any decline into the third grade. The decline of the Goodenough Draw A Person Test suggests the possibility that growing up in a disadvantaged environment has the most deleterious effect on the child's image of people--the adult male or oneself, rather than on language.

Finally, the three tests differed considerably with regard to their sensitivity to sex differences. Analyses of variance yielded significant sex differences consistently on the Goodenough and least often on the Stanford-Binet Test. The sex differences favored girls but generally did not interact with length of educational experience.

Classroom Marks. The most relevant evidence for the impact of preschool education on school performance becomes available when we can begin to obtain school grades for children in our three different groups. With all due respect to the limitations of classroom grades, they remain important indicators of academic achievement, especially when they are drawn from a large number of classrooms in different schools. In our own case, the number of schools attended by children increased more than ten-fold from four schools at the outset of our study to fifty different schools by the end of the second grade. Moreover, marks give us more detailed information concerning a variety of academic skills than we could obtain from our intelligence tests.

Table 4 shows that the timing of educational intervention is significantly reflected in marks at the end of the first grade. Children with preschool experience, whether it was nursery and/or kindergarten, receive significantly higher grades in arithmetic, reading, and writing than children who entered first grade with no prior educational experience. Apparently it does not matter whether a child had nursery and kindergarten, or only kindergarten: both types of background experience clearly affect his grades, compared to children with no pre-school experience.

These findings at the end of first grade are supported by subsequent analyses of marks obtained for the same children on the first and final report cards of the second grade (see Tables 5 and 6). The impact of early educational intervention now becomes apparent in a number of important subjects in addition to arithmetic and reading. Children in Groups I and II surpass those in Group III with respect to spelling, social studies, science, speech, written expression and music. Preschool experience apparently does not affect performance in such areas as art, health education, work habits, handwriting and citizenship practices. However, it should be noted that children with pre-school experience tend to have superior grades even in these latter areas, although the trends failed to reach statistical significance.

This demonstrated prolonged effect of earlier educational intervention on academic achievement in most basic cognitive skills is indeed remarkable, especially since 44 percent of these children were spread over fifty schools and since the teachers did not know to which of our three groups their pupils belonged.

Finally, the common trends of our findings, based on two different methods of assessing intellectual achievement (standardized tests and marks (from entirely independent sources,

Table 4--Cumulative Marks and Chi Squares at the End of First Grade for Children with Different Amounts of Educational Background: Group I Nursery and Kindergarten, Group II Kindergarten only, Group III neither Nursery nor Kindergarten

Subject	Group	Frequencies (worst)*	(best)	Chi Square	d.f.	P
Arithmetic	I	25	27	9.89	2	<.01
	II	24	22			
	III	39	12			
Reading	I	37	15	6.86	2	<.05
	II	33	13			
	III	46	5			
Writing	I	27	24	9.88	2	<.01
	II	16	30			

* Worst equals marks of C, D, F; best equals marks of A, B.

Table 5--Marks and Chi Squares on First Report Card in Second Grade for Children with Different Amount of Educational Background: Group I Nursery and Kindergarten, Group II Kindergarten only, Group III neither Nursery nor Kindergarten

Subject	Group	Frequencies (worst)*	 (best)	Chi Square	d.f.	P
Arithmetic	I	15	35	11.22	2	<.01
	II	17	26			
	III	28	16			
Reading	I	36	14	6.84	2	<.05
	II	38	6			
	III	42	4			
Spelling	I	19	28	7.73	2	<.05
	II	20	22			
	III	29	13			
Social Studies	I	23	21	12.17	2	<.01
	II	29	13			
	III	35	5			
Science	I	36	23	6.41	2	<.05
	II	28	15			
	III	36	7			
Speaking	I	29	21	7.39	2	<.05
	II	27	19			
	III	36	8			

Table 5--Continued.

Subject	Group	Frequencies (worst)*	(best)	Chi Square	d.f.	P
Written Expression	I	35	9			
	II	33	8	6.56	2	<.05
	III	38	1			
Art	I	24	22			
	II	19	18	2.39	2	N.S.
	III	26	13			
Health Education	I	22	25			
	II	18	23	2.32	2	N.S.
	III	25	17			
Handwriting	I	28	20			
	II	24	22	1.12	2	N.S.
	III	29	17			
Work Habits	I	27	24			
	II	25	23	2.65	2	N.S.
	III	32	16			
Citizenship Practices	I	30	21			
	II	22	26	2.12	2	N.S.
	III	28	20			

*Worst equals marks of C, D, F; best equals marks of A, B.

Table 6--Marks and Chi Squares on Final Report Cards in Second Grade for Children with Different Amounts of Educational Background: Group I Nursery and Kindergarten, Group II Kindergarten only, Group III neither Nursery nor Kindergarten

Subject	Group	Frequencies		Chi Square	d.f.	P.
		(worst)*	(best)			
Arithmetic	I	24	21			
	II	24	20	5.90	2	<.05**
	III	34	11			
Reading	I	24	20			
	II	25	19	9.23	2	<.01
	III	37	8			
Spelling	I	13	27			
	II	16	27	11.50	2	<.01
	III	28	14			
Social Studies	I	21	21			
	II	20	24	14.23	2	<.01
	III	36	8			
Science	I	22	20			
	II	21	28	16.59	2	<.01
	III	38	6			
Speaking	I	23	21			
	II	21	23	7.73	2	<.05
	III	33	11			

Table 6--Continued.

Subject	Group	Frequencies (worst)*	(best)	Chi Square	d.f.	P
Written Expression	I	23	17	4.20	2	N.S.
	II	28	14			
	III	33	9			
Art	I	13	28	3.15	2	N.S.
	II	16	27			
	III	22	22			
Health Education	I	17	25	3.71	2	N.S.
	II	16	28			
	III	23	18			
Handwriting	I	21	24	0.13	2	N.S.
	II	22	22			
	III	23	23			
Music	I	19	22	9.40	2	<.01
	II	18	25			
	III	28	10			
Physical Education	I	18	21	0.62	2	N.S.
	II	19	24			
	III	19	17			

* Worst equals marks of C, D, F; best equals marks of A, B.

** P= .05 for x^2= 5.99

provide supportive validity to each other. The intelligence tests carry weight because they represent objective, standardized instruments with known reliability. Our findings based on classroom marks carry weight because they represent the child's ability to learn in a variety of areas over an extended period of time.

Motivation

Teacher Ratings. Motivation to learn and to go to school have been accepted as basic variables in the educational process. As report cards do not get at these variables directly, we made an attempt to get such information about our children from their teachers through systematic interview. All teachers of classes which included one or more of the children from our three follow-up groups were asked to select two or three children in their classroom who had the best attitude toward learning and toward school in general, and two or three children who had the poorest attitude toward learning and toward school. We also asked teachers to rate children in the same way for their ability to learn and for their popularity among peers. We were able to do this during the first and second grade, encompassing a total of fifty teachers in fifty different schools. After the teachers placed children on the extremes of several dimensions, we compiled a total list which was checked against the names of children in our three groups. The children from the total list which belonged to our three groups and which happened to be mentioned as part of those representing extremes of our dimensions were compared as outlined in Tables 7 and 8. Inspection of Table 7 shows that in the first grade, most of the children selected as manifesting the best attitude toward school came from Groups I and II, that is, from children with pre-school experience. Children selected by their teachers as manifesting the worst attitude toward learning and the most negative attitude toward school came relatively more often from our Group III, that is, our children who did not have any preschool experience. Judgments on the other two dimensions, that is, whether the child was especially able or slow and whether a child was more or less popular among other children, distributed in the predicted direction but failed to reach statistical significance.

The same ratings by teachers were redone at the end of the first report period in the second grade (see Table 5). These findings confirm those obtained at the end of the first grade, except that the effect of earlier educational intervention on ratings of pupil's perceived ability in the classroom had then become highly significant. These data offer evidence for the beneficial effects of preschool and kindergarten experience on the child's attitude toward learning and school in general. Early educational intervention affects not only cognitive functioning and academic achievement, but also the child's attitude toward learning and school.

Before I began working with lower-class disadvantaged children, I had developed a series of personality measures which were validated on middle-class children.[2] The specific areas of motivation and personality functioning tapped by these measures were: dependency of children on adults, independence striving, dependency conflict, and aggression. Dependency striving refers to the frequency and persistence with which a child seeks help, attention, recognition, physical contact, and proximity to adults. Independence of autonomous achievement striving refers to the frequency with which a child initiates activity, tries to overcome obstacles, and to complete activities by himself, to the frequency with which he derives satisfaction from this whole process and the extent to which he desires or enjoys doing things or solving problems by himself. The idea of unaided effortful

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[2] E. K. Beller, "Exploratory Studies of Dependency" Transactions of the New York Academy of Sciences, Ser. II, Vol. 21, No. 5 (March, 1959), pp. 414-426. E. K. Beller and J. L. Turner, Sex Differences: The Factorial Structure of Personality Variables in "Normal" and "Emotionally Disturbed" Preschool Children. Paper presented at the Annual Meetings of the Eastern Psychological Association, Philadelphia, Pa. in April, 1964.

Table 7--Ratings of Pupil Attitudes, Abilities and Popularity in First Grade for Children with Different Amounts of Educational Background: Group I Nursery and Kindergarten, Group II Kindergarten only, Group III neither Nursery nor Kindergarten

	Dimensions	Group	Frequencies (best)	Frequencies (worst)	Chi Square	d.f.	P
1	best vs worst attitude toward study and learning	I	9	2	9.07	2	<.05
		II	4	5			
		III	1	7			
2	most positive vs most negative attitudes toward school	I	6	2	6.01	2	<.05
		II	6	2			
		III	3	8			
3	especially able vs especially slow	I	8	2	3.47	2	N.S.
		II	4	2			
		III	4	6			
4	most vs least popular among other children	I	5	8	2.70	2	N.S.
		II	5	2			
		III	3	6			

Table 8--Ratings on Pupil Attitudes, Abilities and Popularity in Second Grade for Children with Different Amounts of Educational Background: Group 1 Nursery and Kindergarten, Group II Kindergarten only, Group III neither Nursery nor Kindergarten

Dimensions	Group	Frequencies		Chi		
		(best)	(worst)	Square	d.f.	P
1 best vs worst	I	17	4			
attitude toward	II	12	5	8.88	2	.05
study and learning	III	8	13			
2 most positive vs	I	15	9			
most negative atti-	II	13	4	6.20	2	.05
tude toward school	III	6	11			
3 especially able vs	I	16	5			
especially slow	II	10	9	10.76	2	.01
	III	5	15			
4 most vs least	I	12	9			
popular among	II	5	5	1.12	2	N.S.
other children	III	5	8			

striving and self-sufficiency underlies this concept of independence. Aggression is defined as the frequency with which a child threatens, derogates, attacks others physically, and destroys materials.

Dependency conflict is defined in terms of a child's difficulty in accepting his dependency needs and in permitting himself to seek emotional and physical support from his protective environment.[3] Thus, a child who is conflicted over his dependency will be inhibited in expressing his needs for help, affection and attention: he will use indirect and devious ways to gratify his dependency needs: and finally, he will betray his conflict over dependency by fluctuating irrationally and unpredictably between lack of control and over-control in his manifestations of dependency needs.

The data presented in Table 9 illustrate the place of dependency conflict in the personality dynamics of the children in our follow-up study. First, we note that dependency motivation and dependency conflict are almost entirely uncorrelated. This finding demonstrated that we have successfully constructed two separate and different measures of dependency: one which deals with the frequency and intensity of a child's dependency striving, and the other with the amount of conflict he experiences over manifesting his dependency needs.

The relationship between dependency conflict and both autonomous achievement striving and aggression (see Table 9) are of substantive importance. We find that the more conflicted a child is over his dependency, the more impaired he is in his autonomous achievement striving, or self-sufficiency. Thus, disadvantaged children who are inhibited in seeking help and support from the adult environment fail to develop a high level of motivation to function independently and self-sufficiently.

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[3] The concept of dependency conflict and the initial analyses of our conflict measures were first reported in: Disposition Towards Dependence and Independence, by E. Kuno Beller. Presented at the Annual Meetings of the American Psychological Association, September, 1961.

Table 9--Correlations (r) between Personality Measures^{+} in Nursery, Kindergarten, and First Grade Children

Personality Variables	Nursery	Kindergarten	First Grade
	(N = 174)	(N = 93)	(N = 96)
DC with DS	- .17**	-.09	-.07
DC with AAS	- .34**	-.50**	-.70**
DC with AGG	.08	.30**	.25*

** $p < .01$
* $p < .05$
+ Dependency Striving (DS), Autonomous Achievement Striving (AAS), Aggression (AGG), Dependency Conflict (DC).

In other words, the disadvantaged lower-class child who does not trust his environment enough to seek and utilize physical and emotional support from adults fails to develop confidence in himself and is unable to function independently and self-sufficiently.

Finally, the relationship between dependency conflict and aggression is less strong but still statistically significant and important. Children with conflict in the area of dependency also have difficulty in controlling their aggression. Thus, the child who is conflicted over his dependency not only fails to develop self-sufficiency, but also apparently experiences difficulty in handling his aggression. Both relationships, especially the former, seem to increase with age (see Table 9).

A consideration of the relationship between motivation and intellectual performance in our children reveals that autonomous achievement striving and dependency conflict relate consistently and inversely to performance on intelligence tests. Table 10 shows that autonomous achievement striving correlates consistently and positively with performance on three different intelligence tests, whereas dependency conflict correlates consistently and negatively with performance on the same three tests. Those children who are more motivated to be self-sufficient in coping with their environment are also higher in their intellectual achievement, as measured by our tests. Similarly, children who are more inhibited in manifesting dependency needs and in turning to the adult environment for support are more handicapped in their intellectual achievement. The fact that the magnitude of these relationships increases with age on two of our tests suggests that they may reflect a developmental process in these lower class deprived children.

These findings have definite implications for curriculum planning, especially for nursery and kindergarten programs. Much thought should be given to procedures for encouraging these children in their autonomous achievement striving, that is, in their efforts to explore things on their own initiative and to carry to completion activities that they have begun. Even more central is the need to help these children develop greater trust in their adult environment and thereby overcome their inhibitions and conflicts over turning to protective adults for emotional and physical support. Our findings suggest that such efforts would greatly enhance the effectiveness of programs for training these children to become competent in areas of intellectual achievement, as well as to develop confidence in themselves and in others.

We have shown that certain motivational variables correlate with intellectual achievement in deprived lower-class children, while other motivational variables fail to effect the quality of a child's performance in the cognitive domain. We now consider the issue of changes in personality from nursery to first grade. Table 11 suggests the following generalizations: Group I, that is, first graders who have been in school for the longest period, seem to be highest on dependency on teacher and on aggression measures. These children are also highest on autonomous achievement striving, and lowest on conflict over dependency. In sharp contrast, children from Group III, who did

Table 10--Correlations (r) of Personality Measures$^+$ with Intellectual Achievement in Nursery, Kindergarten and First Grade Children

Personality Variables	Nursery	Kindergarten	First Grade
		Stanford-Binet Scores	
	(N = 49)	(N = 93)	(N = 86)
DS	.01	.20	.02
AAS	.30*	.32**	.43**
AGG	-.02	-.02	.02
DC	-.13	-.30**	-.41**
		Draw A Man Scores	
	(N = 45)	(N = 91)	(N = 95)
DS	-.11	.01	-.03
AAS	.18	.23	.36**
AGG	-.15	-.16	-.15
DC	-.04	-.20	-.31**
		Peabody Picture Vocabulary Scores	
	(N = 94)	(N = 82)	(N = 95)
DS	-.01	.16	-.07
AAS	.38**	.24*	.29**
AGG	-.07	-.02	.11
DC	-.33**	-.34**	-.21*

** $p < .01$

* $p < .05$

+ Dependency Striving (DS), Autonomous Achievement Striving (AAS), Aggression (AGG), Dependency Conflict (DC).

not enter school until the first grade, are lower than the other two groups of first graders in autonomous achievement striving, and higher in inhibition, or conflict over dependency.

Table 11--Average Personality Measures* of First Grade Children with Different Amounts of Educational Background: Group I Nursery and Kindergarten, Group II Kindergarten only, Group III neither Nursery nor Kindergarten

	Group I (N = 31)	Group II (N = 28)	Group III (N = 37)
DS^{+}	4.30	3.56	3.72
AAS‡	4.35	4.29	3.41
AGG‡	4.54	3.56	3.44
DCT^{+}	3.55	3.95	4.25

‡ Difference between groups p ,05 when tested by Analysis of Variance

+ Difference between groups p .10 when tested by Analysis of Variance

* Dependency Striving (DS), Autonomous Achievement Striving (AAS), Aggression (AGG), Dependency Conflict (DC)

The meaning of these findings may be clarified by a discussion of the implications of two pairs of personality variables, namely autonomous achievement striving and dependency conflict on one hand, and dependency motivation with respect to teachers, and aggression on the other. We must refer back to a finding reported in Table 9, showing that only autonomous achievement striving and dependency conflict correlate with intellectual achievement. Thus, the finding that both Groups I and II, who had preschool experience are higher in autonomous achievement striving and lower in dependency conflict, suggests that these trends may be related to significantly higher intellectual performance of these same two groups on three different tests of intellectual achievement. In other words, children who have had the benefit of preschool experience are more highly motivated to be self-sufficient in their achievement striving, and simultaneously have greater trust in their adult environment so that they seek from it the physical and emotional support it has to offer.

The elevation of the dependency motivation and aggression variables in children who have had both nursery and kindergarten experience is clarified when we reiterate that these two variables are uncorrelated with intellectual achievement at three successive age levels, that is, nursery, kindergarten a and in first grade. This finding alone indicated that an elevation in emotional dependency on the teacher and in the expression of aggression is not incompatible with the superior intellectual functioning of these small children.

What then is the meaning of increased dependency and aggression in Group I children, that is, children who have had nursery experience? It may mean simply that these children have developed a closer emotional bond with the teacher, which represents a delayed development of what normally occurs earlier in middle-class children in our society. This emotional tie provides the teacher with a greater opportunity to reach the child, to socialize him, and to influence him than is possible with the child who has not yet developed such an emotional tie. Thus, heightened dependency might be a positive sign that the child is now more amenable to socialization and to educational influence from the teacher, rather than a sign of fixation at an infantile level of functioning. The same inference can be made with regard to heightened aggression in children who have had nursery experience. Most of these children experience consideable frustration in their daily lives away from the classroom. These children may simply be less inhibited in giving vent to their reactions to a very frustrating life outside the classroom. The positive meaning of this finding for educational opportunity and the role of the school in shaping the child's future will be more fully appreciated after I report one of my most vivid impressions in preschools for deprived lower-class children.

After training teachers to rate children in the areas of dependency, autonomous achievement striving and aggression, I encountered considerable resistance from teachers from a similar background as their pupils when asked to report incidents of aggression. Time and again, I was confronted with the statement that these children did not manifest any aggression, particularly in the nursery and kindergarten. Apparently, some of these teachers were reluctant to either perceive or to permit aggression in these lower-class, highly deprived children from backgrounds which generated considerable frustration and therefore at least the potential for aggression. These teachers' difficulty in either perceiving or accepting aggression in their deprived preschool pupils greatly weakens their potential effectiveness as socializers of aggression. By denying or suppressing aggressive behavior in the nursery or kindergarten, the teacher removes the aggression from the classroom, but she disqualifies herself as an effective agent in modifying the child's ability to cope with hostile and aggressive impulses away from the classroom.

On the basis of this experience, I would say that our nursery children who manifested more aggression in the first grade were not necessarily less socialized than their peers who separated this area of behavior from the classroom and thereby removed it from the teacher's influence. The stable and intimate relationship which the child with a background of nursery school was able to experience and develop with his teacher had encouraged him to display a much wider range of all behavior, even if it was undesirable, in the presence of this protective figure whom he had come to trust. In this sense, the heightened manifestations of emotional dependence on the teacher and of aggression represents a delayed, positive development in deprived children, which indicates that these children have become more ameable than their peers to the educational process and to socialization by the school. Together with higher autonomous achievement striving and lower inhibition in the manifestation of dependency, these changes represent greater self-confidence and increased trust in the human environment in those children who have had the benefit of nursery experience, compared to children who were not exposed to the educational process until they had entered first grade.

Direct Observation of Dependence and Autonomous Functioning. The final part of this report will deal with a study in which we have tried to clarify and validate some of the major findings and conclusions which have been presented in the preceding parts of this paper.

In our longitudinal study, we have attributed gains in intellectual achievement and superiority of some children over others to length of educational experience. These findings were based on comparisons between groups which permitted a good deal of overlap with regard to the dependent variable, namely gain or superiority in intellectual achievement. In the new study, we have carefully divided children in a Head Start Program on the basis of changes in their test results from the beginning and towards the end of the program into three groups: a group of children who had gained, a second group who had failed to change, and a third group who lost in I.Q. points. There was no overlap on this particular variable between the three groups of children.

Another clarification and refinement which the new study attempted, had to do with the variables of dependency and autonomy. In our longitudinal study, we distinguished between dependency motivation and dependency conflict. Measures of dependency motivation which failed to relate to intellectual functioning, did not make a distinction between instrumental and emotional dependency. In our new study, we attempted to make this distinction and expected that our new measure of emotional dependency would behave very much like our earlier measure of dependency motivation, that is, it would fail to relate to the intellectual achievement. However, our new measure of instrumental dependency was expected to behave more like our measure of dependency conflict and reflect the child's trust in his environment and his readiness to make use of available help. If a child requests help, because he cannot do something by himself, it does not reflect dependency motivation or helplessness on the child's part. Conversely, if a child who fails to seek help for something he wants to do but cannot do by himself, it indicates inhibition or conflict over seeking help rather than low dependency motivation. Therefore, the measure of instrumental and realistic dependence was expected to relate to a child's ability to gain from the educational program in Head Start. Altogether, the detailed, sequential interaction of the child with his teacher which was unexplored in our earlier study was to be investigated more intensively through direct observation in our new study. The general notion of this detailed interaction between a child and his teacher was what the child demands of the teacher, how the teacher responds to the child's initiation, how the teacher's response affects the child's behavior and how the child copes with the teacher's failure to respond to his demands in a positive and supportive way. Of course, the overall objective was to relate these detailed steps in the sequential interaction between the child and his teacher to the child's readiness to gain from the educational experience in Head Start or Get Set Nursery programs.

Another major concern of the new study dealt with clarification of our findings with regard to the role of autonomous achievement striving in the intellectual development of the child. Two clarifications were attempted in the new study. The first dealt with the continued role of the environment as a reinforcer of the child's self-sufficiency. Unless a child is autistic, it is reasonable to assume that his ability to function by himself and to derive gratification from his nonsocial endeavors and experiences needs and probably even elicits support from his social environment. In other words, autonomy does not grow only from within, but develops through reassuring responsiveness from the environment. In our new study, we attempted to obtain concrete data on this question and relate it to a child's readiness to gain intellectually from the educational experience in the Get Set Program. The second clarification with regard to autonomy which was attempted in the new study was to obtain a measure of a child's ability to make learning a self-rewarding experience, that is, to learn a cognitive task in which the reinforcement for his learning is derived solely from his own success in the learning process. We have labeled this process "Task Intrinsic Reinforcement." Thus, in that situation, autonomous achievement striving is carefully controlled and bears directly on the child's cognitive learning and acquisition of intellectual skills. This situation, which took the form of a learning experiment, was systematically related to a child's readiness or failure to gain from his educational experience in the Get Set Program.

Finally, the new study added two methodological dimensions to our longitudinal research, namely direct non-participant observations instead of participant observer ratings and the use of experiments for assessment of a child's intellectual achievement under carefully controlled motivational conditions.

The present study investigated the relationships between the child's dependency interaction with his teachers and the change in his intellectual functioning after eight months of Get Set experience. Specifically, the study was designed to test the following hypotheses:

1. Children with a gain in their level of cognitive functioning as a result of participating in Get Set Programs will: (a) make more realistic instrumental dependency requests of their teachers than children who fail to gain, (b) make more instrumental than emotional dependency demands of their teachers.

2. Children who gain will receive or elicit more positive reactions than other children from their teachers (to their requests for help).

3. Children who gain will make more constructive use than other children of the solicited help and support they receive from their teachers.

4. Children who gain will cope more effectively than other children with failure to receive solicited help (e.g., they try to solicit help from another adult, they try to carry out the activity by themselves, they shift to a different activity 'versus' less effective forms of coping with failure to receive help, e.g., regression and displaced aggression).

5. Children who gain will receive and probably elicit more reinforcement for autonomous goal-directed behaviors from their social environment (e.g., they receive more attention from adults or peers when engaged in autonomous goal-directed behavior).

6. Children who gain will be more successful than other children in learning a problem-solving task under conditions of "intrinsic" reinforcement. This problem-solving situation involved the discovery of a principle in which the child received no other reward or reinforcement than his experiencing a successful outcome of his efforts. The implication of successful learning under this condition of reinforcement is that the child has internalized standards and sources of reward for success in problem-solving situations.[4]

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[4] E. K. Beller and A. Young, Types of Reinforcement and Prior Experience in the Learning of Lower Class Negro Children. Presented at the Annual Meetings of the Eastern Psychological Association, New York City, April, 1966. E. K. Beller, Motivation, Locus of Reinforcement, and Problem-Solving in Children. Presented at the Annual Meetings of the American Psychological Association, San Francisco, California, 1968.

Thirty-six children were selected from the total Get Set sample of 120 children in Philadelphia studied by the University, Head Start Evaluation and Research Center and groups of 12 children each were matched on the basis of changed scores from the fall and spring administration of Stanford-Binet Tests. The first criterion for selection involved matching pairs of children with equal I.Q. scores on the amount of gain and loss. For example, a child with an initial I.Q. of 90 and a gain of seven points, on the re-test was matched with another child who had an initial I.Q. of approximately 90 but a loss of approximately seven points of the re-test. This was done to overcome the regression effect that was clearly evident in the group as a whole. This procedure resulted in three groups of children, one group (N = 13) with gains from four to 18 I.Q. points and a median gain of 10 points, a second group (N = 11) with losses from four to 18 I.Q. points and a median loss of nine points, and a third group (N = 10) with changes that ranged between a loss and gain of three I.Q. points and a median change of -.5 I.Q. points.

Our measure of I.Q. change was based on two administrations of the Stanford-Binet, one early in the fall of 1966 and the other late in the spring of 1967, with an approximate interval of eight months.

Observational data on dependency sequences in teacher-child interactions were obtained through six consecutive 15-minute observations in two situations of the daily educational program in Get Set. (A set of observation categories are included in Appendix A). The two situations were free-play and free-work periods. One of these situations occurred at the beginning of the nursery day, and the second took place prior to lunch. A stratified, randomized design was used to assign children to observation periods and to assign each observer to particular children. The design involved assigning six different observers to each of six observation slots for each child. Eighty-five percent of the observations implemented the design.

In our problem-solving task, the child was asked to guess under which one of three boxes a charm was consistently hidden. The relevant cue to be discovered by each child was middle-sizedness, namely that the charm was hidden always under the middle-sized box, which differed in no other way from the two other boxes. The child was told that there was a way of finding out and guessing correctly in each try which one of the boxes hid the charm. The child was always given 30 trials unless he reached the criterion of six errorless trials earlier in the series. Correction was permitted in each trial and the order of presentation was varied randomly from trial to trial. The child received no reinforcement for success other than his perception of having made the correct response, which led to the discovery of the treasure.

The data presented in Table 12 are of a descriptive nature. The Table is divided into four sections. Section I reports average frequencies of dependency requests made by children of the teachers. It can be seen from inspection of the first three rows that the boys' data clearly support our first hypothesis. Gainers make at least twice as many instrumental help requests, that is, realistic requests for help, than the other two groups. The boy gainers also made twice as many more realistic than emotional dependency requests. Neither of the other two groups yielded such findings. The data for the girls also support our hypothesis but in quite a different way. Here we find that girls who lost in I.Q. made, on the average, less than half as many realistic requests for help than the other two groups of children. However, the girls who gained in I.Q. made less than half as many ploys for negative attention than the other two groups of girls. The data for girls on seeking physical contact were equivocal. Thus, we might conclude that our first hypothesis was clearly supported by our findings for boys and was partially (and indirectly) supported by our findings for girls.

Table 12--Child Teacher Interaction Sequences. Average Frequencies of Dependency Request by Children, Responses from Teachers and Reactions from Children Who Gained, Lost, and Showed no Change in Stanford-Binet Performance from the Beginning to the End of a Year's Attendance in Head Start Classes

	Boys			Girls		
	Gainers (N = 4)	Losers (N = 7)	Non Changers (N = 6)	Gainers (N = 6)	Losers (N = 7)	Non Changers (N = 4)
Instrumental vs Emotional Dependency			Section I			
Seeks instrumental help	10	4.9	1.1	5.0	1.7	10
Seeks negative attention	4.8	3.3	.7	.7	1.7	4.2
Seeks physical affection	4.5	3.7	.8	7.3	2.6	8.5
Teacher Responses			Section II			
Positive teacher responses	15	7.6	2	10	4.1	14
Child's Response to Teacher			Section III			
Constructive reactions to teacher's response	24	10	3	11	7	2.8
Regressive and displaced aggressive reactions to teacher frustration	.2	.6	0	.2	0	1.2
Attention Received for Autonomous Behavior			Section IV			
Adult approaches	8.2	3.9	2.3	6.0	5.0	2.3
Peer approaches	10.2	5.7	5.6	5.8	4.4	5.7

Section II in Table 12 deals with the teachers' reactions to the children's requests for help. We find that the data support our second hypothesis. Boys who gained received at least twice as many positive reactions from teachers than the other boys in the sample. Once more, the evidence for girls also supported our second hypothesis, but only indirectly. Girls who lost in I.Q. received less than half as many positive reactions from teachers than the other girls.

Section III of Table 12 deals with children's reactions to teachers' responses. In support of our third hypothesis, we find that boys who gained made more, that is twice as many, constructive reactions to teachers' responses than the other boys. The data for the girls supports our hypothesis as directly as the data for the boys, but not as strongly. The next part of the third section deals with regressive reactions by the child to the teachers' responses. Although the average response frequency is rather low for this category, the data clearly supports our hypothesis for boys but not for girls. Boys who lost in I.Q. exhibit more regressive and displaced aggressive behavior in response to teacher's failure to meet their demands than the other boys. The data for the girls fail to support this hypothesis.

Section IV of Table 12 deals with the question of whether children who gain received more attention than other children from their social environment when they were engaged in autonomous achievement striving, that is, self-sustained, goal-directed behavior. As can be seen from the last two rows of Table 12, boys who gained when they engaged in self-sustained autonomous activities received at least twice as much unsolicited attention from their teachers than other boys, and about twice as much unsolicited attention (regardless of quality) from their peers than other boys. The data for girls are in the predicted direction for attention from teachers, but not markedly so. However, once more we notice that with regard to unsolicited attention from peers, the support for our hypothesis comes from the girl losers rather than from the gainers.

Our data concerning relationships between a child's ability to gain from his Head Start experience and his success in problem-solving under conditions of intrinsic reinforcement is presented in Figure 1. It can be seen from this figure that children who gained in their intellectual performance from the beginning to the end of Get Set manifested better problem-solving performance over 30 trials than the other children.

It is evident from the preceding section that our intensive observational study and the employment of an experimental learning task supported, and more importantly clarified, some of the major concepts and findings in our longitudinal research reported earlier. The child who gains from his educational experience in the Get Set program differs from other children in the program in his readiness to make realistic demands for help and not in the intensity of his emotional or motivational dependency on the teacher. Thus, our concept of instrumental dependence has more to do with dependency conflict than with emotional dependence. The findings in Sections II and III of Table 12 further support this conclusion. The child who gains from Head Start not only makes more realistic demands on his teacher than other children, but also receives some more positive reactions from the teacher and copes more effectively and constructively with the teacher's reaction to him than other children.

With regard to autonomous achievement striving, we gained important information from our intensive observational study. In summary, we found that children who gained in their intellectual achievement in Head Start received more encouragement from the social environment for being independent and self-sufficient in their activities, and that these children performed better than other children on a learning task when they have to rely on the success of their endeavor as the sole source for their reinforcement, or to put it another way, when they have to make the learning process a self-rewarding one. The implication of these findings for educational planning are the same as the ones stated on page 14 of our report of the longitudinal research. Programs for the disadvantaged child need to focus on helping these children develop greater trust in the adult environment and thereby overcome their inhibitions and conflicts over turning to the protective adults for support. These children need to be encouraged when they behave autonomously or self-sufficiently and to be given ample opportunity for experiencing success in problem-solving situations so that the learning process may gradually become a self-rewarding one for them.

The final section of my report will deal with relationships between data gathered on a national sample of Head Start children and our own data in the direct observational study. This step was possible because we selected children who were part of the national sample for purposes of our own study. We felt that the soundness of our own work would gain considerably if relationships between our own data collected in an intensive study on a small sample of children would relate in a meaningful way to the data collected less intensively in the national study but of a much larger sample of children. The particular measures taken from the national study will not be described in detail here. For detailed information on each of these measures, the reader is referred to the report for 1966-67 by the Institute for Educational Development.

The findings of this analysis are all based on Mann-Whitney *U* tests or on "t" tests.

Children from crowded homes made fewer realistic demands for help from the teacher (p. $<.10$) and were less effective in evoking a reaction from the teacher to their demands (p. $<.10$). These children from more crowded homes also made less constructive use of the help they received from the teacher in response to their requests. When engaged in their own activity, the same group of children were less distracted by other children. This first cluster of findings strongly suggests that the child from a lower-class, crowded home has a less intensive relationship with the teacher in the Get Set Program.

A factor analysis of the behavior inventory employed in the national study yielded several factors. We investigated the relationship of these factors to our own data. We found that children who were high on a factor of impulsivity, excitability and defiance were less effective in getting the teacher's attention. The same children had greater difficulty continuing their on-going activity when another child or adult entered their field of action. This finding suggests a vicious cycle. The impulsive, excitable and defiant child has difficulty in relating with others. However, the adult is less responsive to this child, even when the child makes an attempt to enter into a relationship with his teacher. Thus, the very difficulty becomes self-perpetuating.

Children who are rated high on inhibition, withdrawal and mistrust of others on the behavior inventory, exhibited fewer positive attention-getting responses toward teachers than other children. This finding may be considered an independent validation of the behavior inventory by our method of direct observation.

The national study made available to us data concerning the behavior of teachers through the Observers Rating Form. We were particularly interested in relating the characteristics of the teachers of our children as measured by the observational technique in the national study to the success of our own children in learning a cognitive task under conditions of Task Intrinsic Reinforcement. We found that the children of teachers who used better and more diversified techniques of teaching and children of teachers who cultivated more respect for the rights, possessions, and idiosyncrasies of others, learned our problem-solving task better under conditions of Intrinsic Reinforcement than children from other teachers. A similar trend was found for children of teachers who exhibited greater respect than other teachers for the child's family ($p < .10$). Interestingly, the same characteristic of teachers, that is, showing respect for the child's family, was very significantly associated with a child's readiness to gain from the educational experience in the classroom. In other words, more of our children who showed a positive gain on the Stanford-Binet came from teachers who manifested more respect for the child's family. Here may be an important link between the classroom and the family which deserves a good deal of attention in continued efforts of educational programs for lower-class, disadvantaged children.

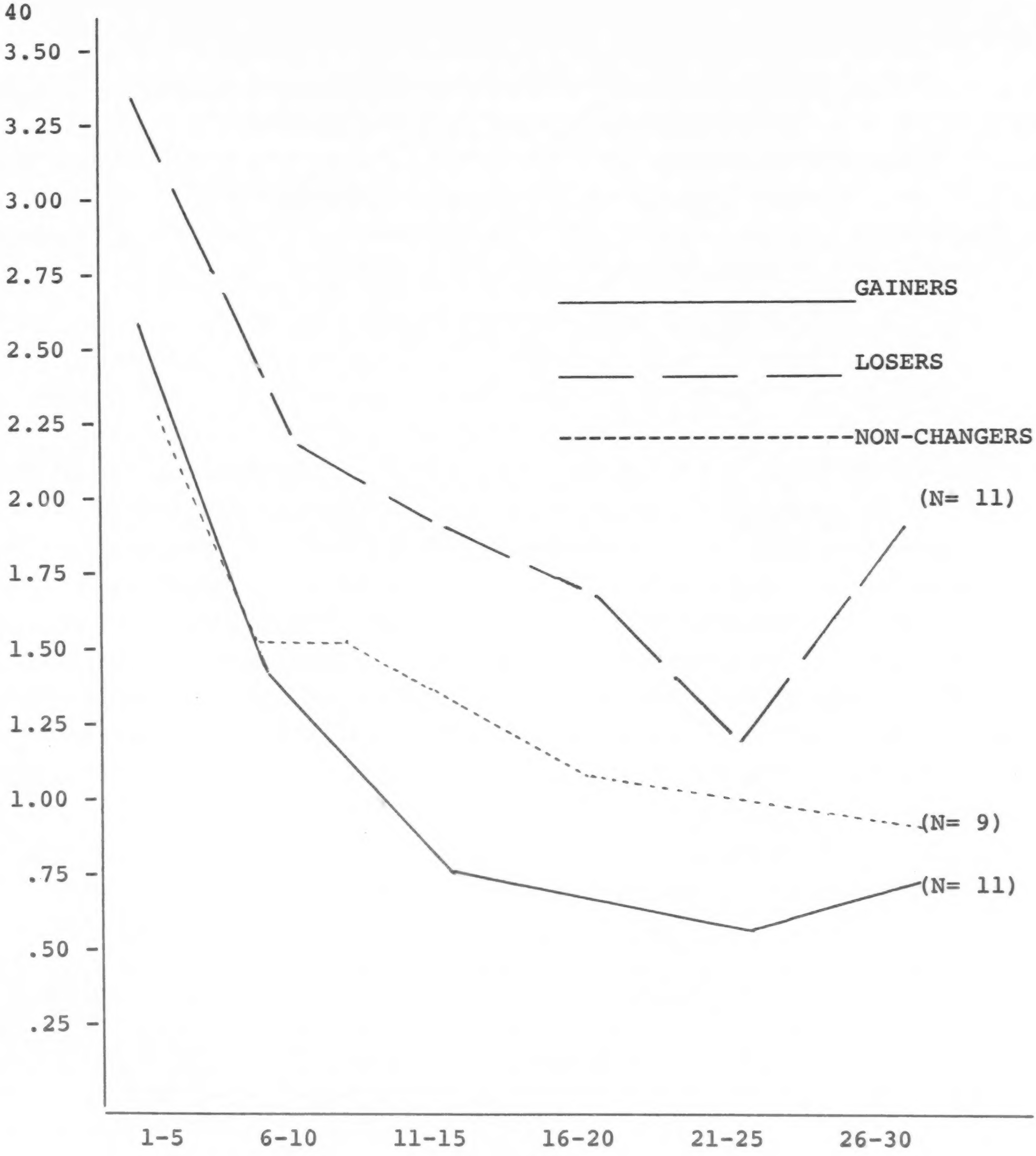

Figure 1. Average Number of Errors over 6 Blocks of Trials for 3 Groups of Head Start Children

APPENDIX A

CATEGORY DESCRIPTIONS:

PUPIL BEHAVIOR

1. Instrumental behavior: Seeks services, information, materials, permission for non-routine activities.
2. Positive attention getting mechanism (+AGM): Seeks recognition, greeting, praise, reassurance, attention.
3. Negative attention getting mechanism (-AGM): Does that which the teacher has just requested *not* be done. (Try to separate this from mere peer interaction. This can be done by noting the amount of attention given the teacher as compared to that given the peer.)
4. Ambiguous attention getting mechanism (± or 0 AGM): Attention getting with both positive and negative aspects to it; e.g., doing the right thing at the wrong time or in the wrong way. Tattling: AGM that can't be classified readily as either positive or negative.
5. Body contact: This is assumed to be positive: (If you spot any negative B.C.; i.e., hitting, biting, scratching, write in a subscript *N* with your scoring numeral.) leaning on, touching in any + manner.
6. Proximity to: Child locates self near adult, for no other reason than proximity. Plays near adult when this play could be carried out elsewhere. Sits beside adult.
7. Glances at: Instances of fleeting glances at adult, each glance within 5 seconds of the preceding one. Stares at adult for 20 seconds.

CHILD'S INITIAL BEHAVIOR

Instrumental behavior: Seeks services, information, materials, permission for non-routine activities.

Positive attention getting mechanism (+AGM): Seeks recognition, greeting, praise, reassurance, attention.

CHILD'S INITIAL BEHAVIOR continued

Negative attention getting mechanism (-AGM): Does that which the teacher has just requested not to be done. (Try to separate this from mere peer interaction. This can be done by noting the amount of attention given the teacher as compared to that given the peer.)

Ambiguous attention getting mechanism (± or 0 AGM): Attention getting with both positive and negative aspects; e.g., doing the right thing at the wrong time or in the wrong way. Tattling: AGM that can't be classified readily as either positive or negative.

Body contact: This is assumed to be positive: (If you spot any negative B.C.; i.e., hitting, biting, scratching, write in a subscript N with your scoring numeral.) leaning on, touching in any + manner.

Promimity to: Child locates self near adult, for no other reason than proximity. Plays near adult when this play could be carried out elsewhere. Sits beside adult.

Glances at: Instances of fleeting glances at adult, each glance within 5 seconds of the preceding one. Stares at adult for 20 seconds.

TEACHERS' RESPONSES

+ Positive response:

- Gratifies child's instrumental request.
- Acknowledges child's presence by a smile, remarks positively on child's comments.
- Distracts in a pleasant manner.
- Positive body contact.
- Jokes with child.

0 Ambiguous response:

Ploy is ignored.

Child's request is not noticed.

- Negative response:

Child is rejected or request is rejected.

Request is ignored by adult who is stressing her goals; e.g., child wants praise for his picture; teacher ignores picture and tells child to hurry to clean up.

Mixed Responses:

± Teacher gratifies, then scolds or withdraws gratification.

$\overset{+}{0}$ Teacher promises gratification when her current task is finished; i.e., child is asked to wait.

$\overset{0}{+}$ Child is ignored, or his request isn't heard; but gratification comes eventually.

∓ Teacher scolds or denies gratification and finally gratifies.

REACTION OF CHILD TO TEACHER RESPONSE

Waits patiently: adult is busy with someone, or something else. Child just stands or sits until adult is finished.

+ Teacher has agreed to help, but pupil must wait until adult has finished what she's doing; again just stands or sits.

Waits repeating same ploy: continues talking after teacher has replied, (divide by 2 if it is on the same topic).

= continues raising hand after a peer has been called on.

= continues misbehaving, looking at adult, body contact.

= if teacher's response has been 0, 30 seconds must pass before rescoring behavior #5, #6, #7; for behaviors #1, #2, #3, #4, wait 10 seconds before rescoring. In case of rescoring divide total by 2.

Waits trying other ploys with the same adult: Asking or commenting on a different topic.

= misbehaving in a different way

= switches behavior category

Returns to an occupation previously engaged in (any occupation engaged in previously during this 15 minute observation).

Starts new occupation, something he hasn't done yet during this 15 minute period.

Starts doing the goal of his request.

Solves instrumental request himself.

Rejects gratification, at least momentarily.

Leaves satisfied, wanders or sits for 3 minutes without any any further interaction.

Leaves not satisfied: child is interacted with before he can initiate his reaction to his teacher's response.

Leaves without satisfaction, wanders or sits for 3 minutes without further interaction.

Makes instrumental request of adult other than the adult initially approached.

Makes instrumental request of a peer.

Makes emotional request of adult other than the adult initially approached.

Makes an emotional request of a peer.

Leaves dissatisfied and regresses: cries, sucks thumb, masturbates, withdraws.

Leaves dissatisfied and displaces aggression: hits, bites, kicks someone other than the denier.

= speaks crossly

= behaves hostilely to another

AUTONOMOUS ACHIEVEMENT STRIVING (AAS)
QUALITY OF INTERACTER'S INTERACTIONS

+ Adult or peer comments positively concerning the subject's AAS.

0 Adult's or peer's comment to the AAS occupied subject is neither strongly + or - concerning his activity.
= The comment doesn't refer to his activity.

± Mixed: The adult's or peer's comment to the AAS occupied subject continues both positive and negative aspects concerning the subject's activity.

- Adult or peer makes a disparaging remark about the AAS activity on the subject.

D Disruptive: Adult or peer comment is aimed at disrupting the subject's activity; e.g., "Stop that!" "Let me do that." "Put your things away."

RESULT OF THE INTERACTION OF THE ONGOING ACTIVITY: (Same for both adult and peer)

C = Continues AAS (May pause momentarily to interact, but goes directly back to AAS)

D = Distracted from AAS - quits, shifts to new activity, wanders off.

F = Interaction comes at end of AAS; i.e., child quits because there's no more to task, not because he was distracted.

QUALITY OF AAS

Group AAS = score in this top AAS block if the child has another or other children engaged jointly or in parallel AAS.

Individual AAS = score in this bottom AAS block if the child is working by himself.

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